

**A COURSE IN
Mental Ability and
Quantitative Aptitude
FOR COMPETITIVE EXAMINATIONS**

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Quantitative Aptitude**
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EDGAR THORPE



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*Dedicated to
my beloved wife
whose time I skilfully
stole to compile this book*

FOREWORD

From my association with the Staff Selection Board, Punjab, I find that the popularity of mental ability (general intelligence) and quantitative aptitude tests is increasing day by day and such tests are administered for almost all competitive examinations. Selection of suitable candidates for various jobs requires a minimum prescribed qualification (e.g. matriculation or graduation), but there is no limit on the maximum qualification. If the system of selection is based on the knowledge of a particular subject or discipline, then selection would not be possible for candidates having the minimum qualification prescribed for a given job, because candidates with higher academic qualifications will have an edge and naturally excel. Thus, the very purpose of fixing a minimum qualification is defeated. To overcome this difficulty, all examination bodies have resorted to mental ability tests.

However, candidates have been facing numerous difficulties in preparing for such tests since the school/college syllabi do not contain such material and there are very few reliable books available on the subject.

Mr. Thorpe has now brought out a self-explanatory volume on mental ability and quantitative aptitude giving numerous types of questions and ample practice material. He has been teaching this subject for more than two decades to students in Punjab seeking guidance from him. He has very ably covered all aspects of such tests and I am sure the book will provide guidance to all those who have a scientific bent of mind and a scientific approach, irrespective of their basic academic qualification. In other words, candidates with the minimum prescribed qualification for a particular competition, need no longer fear that they have limited scope of selection because candidates with higher academic qualifications will excel, provided they prepare from this book and thoroughly go through the practice material provided therein. The experience and expertise Mr. Thorpe has acquired over the years on the subject can be shared by the candidates through the pages of this book and competition will be made less difficult for them.

(Mrs) M Gulam Qadir

Former Member

Staff Selection Board, Punjab

Chandigarh

PREFACE

In almost all competitive examinations these days, there is a paper on Mental Ability and Quantitative Aptitude. Some examination bodies call this paper "Intelligence Test", "General Intelligence Test" or "Intelligence and Data Interpretation Test". The examination bodies administering such tests are: Union Public Service Commission (UPSC), Staff Selection Commission (SSC), Banking Service Recruitment Board (BSRB), Railway Recruitment Board (RRB), etc. This book is designed on the basis of actual examination papers of the previous years of various competitive examinations, viz:

Civil Services, National Defence Academy (NDA),
Combined Defence Services (CDS),
Railway Recruitment Board, Special Class Railway Apprentices (SCRA),
State Bank of India Probationary Officers (PO),
Income Tax Inspectors Examination,
Engineering Services Examination,
Indian Forest Services, General Insurance Corporation and
LIC Administrative Officers' Examination and
MBA entrance examinations of various universities, including CAT (Common Admission Test) conducted by IIM Ahmedabad for their PGDM courses, etc.

Based on these question papers, material has been compiled for this book. For each type of question, hints have been given first for quickly tackling the same, followed by several solved examples with detailed explanations.

After each chapter ample exercises have been provided for exhaustive practice. At the end of the book there are full-length question papers, containing 60–70 questions each, which is the number of questions generally found in the examination papers. Hence this book is both a theory book as well as a practical guide. This book will help the candidates preparing for any of the above competitive examinations in two ways. First, it will acquaint them with the type of questions (both verbal and non-verbal reasoning and data interpretation) they are likely to have in their examination. Second, the book will serve as a practical guide for drilling them to achieve the desired speed in tackling examination questions by actually solving the working exercises, which is very essential for success in these examinations. Further, attempting the full-length test papers, given at the end of this book, in the prescribed time will provide ample preexamination practice material to fully equip the candidates to tackle the mental ability and quantitative aptitude part of their question paper.

However, as the candidates are not allowed to take the question papers out of the examination hall, the type of questions given in this book are based purely on the memory retention of the candidates.

In order to derive optimum benefit from this book it is recommended that the candidates follow closely the instructions given in the beginning of each working exercise. He should attempt the test paper in actual examination conditions with an emphasis on speed.

Finally, I wish to take this opportunity to thank all who, in various ways, have helped produce this book. My thanks are also due to my wife who patiently typed the manuscript of this book, especially because at times she had to type the same page several times as I would make my corrections only on typewritten pages.

EDGAR THORPE

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Section One

Agar, Jr.

THE TEST AND HOW TO TACKLE IT

1.1 Importance of Mental Ability and Quantitative Aptitude Tests

Taking the right decision, at the right time and place, is important, particularly for those in management and administrative positions. Quick decision-making requires mental alertness and the ability to quickly interpret data, establish logical relationships, arrive at the correct conclusions, make the right judgement and also plan carefully for the future. Organisations that are recruiting employees or selecting students for higher study are keen to get people with these mental characteristics. Most organisations and institutions today use mental ability, intelligence and quantitative aptitude tests to help them select the right candidate. These tests form an important part of the entrance tests conducted by the UPSC, Banking Board, management colleges, public and private sector organisations and many, many more.

If you are planning to sit for any entrance test, it is essential that you prepare yourself in the best possible way to get the highest score which you can. This book is meant to help you do just that.

1.2 How This Book Will Help You

In this book we have tried to include all possible kinds of verbal and nonverbal mental ability and quantitative aptitude tests which can form a part of the mental ability and quantitative aptitude test papers in various competitive examinations. To be successful in any examination it is essential to familiarise oneself with the pattern of the test papers. It is obvious that not all the questions included in this book would be asked in your examination. However, by critically analysing the various competitive examination test papers, we have tried to provide a very wide range of questions. We have included here all possible types of questions which may be expected in the competitive examinations.

YOU WILL KNOW WHAT TO STUDY

As there is no specific syllabus for mental ability/intelligence test papers, most candidates fail to score high because they do not know what to study. This test

preparation book containing all possible types of questions that may be found in the mental ability/intelligence test papers. If you go through it thoroughly, working through various exercises and practice tests, you will be fully equipped to attempt your test paper.

YOU WILL GAIN CONFIDENCE

The variety of mental ability tests covered in this book will familiarise you with the type of questions that you may encounter in your examination. Hence there will be no surprises and you will be able to go to the examination hall with confidence.

YOU WILL IDENTIFY YOUR WEAKNESSES AND OVERCOME THEM

As you go through the various sections of this book and work through the exercises and practice tests, you will discover where your weaknesses lie. You will then be able to overcome your weaknesses and be ready to tackle the test successfully.

YOU WILL GET THE 'FEEL' OF THE ACTUAL EXAMINATION

For each type of question, we have provided full length practice tests containing several questions. While working through these practice tests you will experience something of the actual examination environment. At the end of the book there are full length test papers which follow the pattern of the tests you will be facing. By attempting these test papers, under examination conditions (that have been specified by instructions given at the beginning of the test papers), you will be fully prepared to tackle the actual test.

YOU WILL BE ABLE TO COPE WITH EXAMINATION STRESS

In all competitive examinations, the time factor is very important and many candidates fail to score high, not because the paper was difficult but because they failed to attempt all the questions. Time management is a crucial factor governing success at competitive examinations because test papers contain a number of objective type questions to be answered in a relatively short time. Usually, less than a minute per question is available, and if extra seconds are spent on a few questions, there is a possibility of leaving several questions unattempted, even though they were familiar and easy. By working through the exercises and practice tests you will learn to manage time. For this purpose the full length test papers will also teach you to manage your time.

YOU WILL ACTUALLY IMPROVE YOUR MENTAL ABILITY

The practice you get by working through the exercises and tests will improve your thinking power, and sharpen your analytical skills and imagination. You will be able to tackle other types of Mental Ability/Intelligence test questions, even though they are not covered in this book.

YOU WILL DEVELOP 'SPEED'

As mentioned earlier, objective type tests in competitive examinations require not only your familiarity with the types of questions but also your ability to attempt as

many questions as possible in the given time. By attempting the various exercises, practice tests, and test papers and properly timing yourself, you will build the speed which is very essential for your success in the examination.

1.3 How to get the Most From This Book

Please read this section slowly and carefully. The time you spend on this section right now will ensure that you extract the greatest benefit from your investment in this book.

It is very important for you to understand that this book is *not* simply a set of tests for practice. If used properly, you could develop and actually improve your mental ability and quantitative aptitude. It forms a full 'course' and should be taken seriously in small stages. Try and ensure that you have at least one hour of undisturbed time with the book. Keep a pencil, eraser and paper handy, and work at a table. We suggest that you do not work for longer than two hours at a stretch.

Verbal and non-verbal intelligence tests are classified into different sections of this book. First read the introductory part of the section to familiarise yourself with the type of material you are going to study in that particular section. For each type of test, one or two specimen questions are given along with the answer fully explained. You should carefully read and understand the question to know what you have to answer. Then see the correct answer given immediately under the specimen question. Now carefully read the explanation so that you know how such questions are to be tackled. Even if you know the answer, we recommend that you read the explanation given in this book. There may be more than one way of solving a particular question and you may have used a method which may not be given in this book. Another method may be used here. If you read the explanation given here you will be equipped with two methods to solve the questions. Hence you learn something new.

Once you have understood the specimen question, attempt the exercise given under it. Do not go to the second specimen question unless you have worked through the whole exercise of the first specimen question. Attempt each question given in the exercise and match your answers with those given in the book. Now read the explanation given with the answer. If you have not been able to solve a particular question, the explanation will help you to understand it.

Once you have completed all the specimen questions and corresponding exercises as explained above, attempt the practice tests given at the end of each section. It would be good to time yourself. Try to answer one question in one or slightly less than one minute. First attempt all the questions which you find easy. After completing all the easy questions, review the difficult ones and try to answer them as well. Once you have tried all the questions you can, look for the answer in the answer key given at the end of each practice test. Now check the answer to and try to analyse any remaining errors for yourself, armed with the knowledge of the right answer. Also, read all the explanations given along with the answer to the practice tests. Go to the next section only after completing the practice tests in the previous section.

Once you have completed a study of all the sections, attempt the test papers given at the end of the book. These test papers are meant to be attempted under actual examination conditions and the entire paper has to be completed at a stretch. Do not leave the test paper half way. Once you have started a test paper, make sure that you close your book only when all the questions have been attempted. When tackling a test paper, you must ensure that you are undisturbed for the full duration.

1.4 How to Tackle the Actual Test

Read through this section rapidly. You should read it again, more carefully, after you have completed this course. In this section we give some tips that would help you tackle the actual test. Choose the hints that seem to suit you most.

HAVE A QUICK OVERALL LOOK AT THE QUESTION PAPER

Stay calm and composed. Have a quick look at the question paper. This will give you a general idea about the type and number of questions. You are sure to find many questions you are comfortable with. This will help to get you started with confidence.

TIME MANAGEMENT

In many exams, you can find out in advance the number of questions that will be asked in the test. You can calculate the average time you should spend per question. If you cannot do this calculation in advance, do it rapidly before you begin answering the questions. This will prevent you from spending far too much time on any one question.

After going through the various sections of the book, you will have a good idea of the type of questions you find easy and those which you find time-consuming. Try to finish answering the easy ones before you take up the ones which you might find time-consuming.

THERE IS NO HARM IN INTELLIGENT GUESSING

In many tests, there is no negative marking for wrong answers (you can find this out from the instructions given at the beginning of the examination booklet). Where there is no negative marking, guessing does help you. If you are not sure of the correct answer, but in some way are able to eliminate one or more of the answer choices as wrong, your chance of getting the right answer is improved, and it will be to your advantage to guess the answer to a such question.

PAY ATTENTION TO DETAILS

First of all, read the instructions given at the beginning of the paper carefully. Then read the instructions at the beginning of each question. Take note of small words like - *some, almost, mostly, generally, all, some, best, etc.* These are qualifying words and can change the questions completely. Pay special attention to these small words, as these tend to change the meaning of questions completely.

Do not start to answer the questions (even if the question happens to be a familiar one) without first reading the part that gives the instructions. The figures/letters in the question may be familiar, but in the question itself, there may be something different which the examiner wants to know.

REJECT OBVIOUSLY WRONG ANSWERS OUTRIGHT

Objective type questions have four to six answer choices and, usually, you have to select only one correct choice from the choices available. If you are able to locate the correct answer immediately, do not waste time on the other choices. Reject the wrong answers outright. This will help you to save time.

REPHRASE THE QUESTIONS

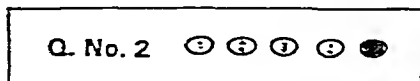
If the outline of a question is not clear to you in the way it is given in the test, try to rephrase the question. A complete understanding of what you are required to answer is essential. By rephrasing the questions you may get a clearer understanding of what is asked.

SELECT THE BEST ANSWER

From the answer choices, select the best answer. There may be questions where, none of the answers seem one hundred percent correct to you. Simply choose the one which seems the most correct to you.

1.5 How to Mark Your Answers

In the test you will be provided with a question paper and an answer sheet. Usually, the answer sheet will contain preprinted question numbers and answer choices corresponding to the question paper. You have to select the appropriate answer, and then by using a lead pencil blacken the oval bearing the correct answer choice against the serial number of the question. For example, if the answer to question no. 2, is answer number 5 (or e), it is shown by blackening the numbered oval as follows:



Note that you should not use an H, 2H/HH, 3H type of pencils. These are hard pencils and marking does not show clearly. On the other hand if you use very soft pencils (like 2B/BB, 3B) your marks may spread to other ovals: or when you want to change your answer by erasing the first one, there may be smudge or dark mark left in place of the erased answer. Therefore **USE ONLY HB PENCILS**

Also note that the oval should be dark enough and should be filled completely. A partly filled oval is not accepted and you may lose marks. Smudged marking of the oval is not acceptable.

SOME EXAMPLES OF WRONG METHOD OF MARK- ING ANSWERS

(Use of Tick Mark)



(Use of Cross Mark)



(Use of Dot)



(Use of line Mark)



(Half-filled oval)



(Mark outside the oval)



SPECIMEN ANSWER SHEETS

You may receive either one of the following types of answer sheet in your examination:

Type 1

Notice that the Question numbers progress from top to bottom:

1	1	2	3	4	5	51	1	2	3	4	5	101	1	2	3	4	5
2	1	2	3	4	5	52	1	2	3	4	5	102	1	2	3	4	5
3	1	2	3	4	5	53	1	2	3	4	5	103	1	2	3	4	5
4	1	2	3	4	5	54	1	2	3	4	5	104	1	2	3	4	5
5	1	2	3	4	5	55	1	2	3	4	5	105	1	2	3	4	5
6	1	2	3	4	5	56	1	2	3	4	5	106	1	2	3	4	5
7	1	2	3	4	5	57	1	2	3	4	5	107	1	2	3	4	5
8	1	2	3	4	5	58	1	2	3	4	5	108	1	2	3	4	5
9	1	2	3	4	5	59	1	2	3	4	5	109	1	2	3	4	5
10	1	2	3	4	5							110	1	2	3	4	5

Type 2

Notice that the question numbers progress from left to right:

1 () () () () () 2 () () () () () 3 () () () () ()
 6 () () () () () 7 () () () () () 8 () () () () ()
 11 () () () () () 12 () () () () () 13 () () () () ()
 16 () () () () () 17 () () () () () 18 () () () () ()
 21 () () () () () 22 () () () () () 23 () () () () ()
 26 () () () () () 27 () () () () () 28 () () () () ()
 31 () () () () () 32 () () () () () 33 () () () () ()
 36 () () () () () 37 () () () () () 38 () () () () ()
 41 () () () () () 42 () () () () () 43 () () () () ()
 46 () () () () () 47 () () () () () 48 () () () () ()

SPECIMEN COPY

In the book answer choices have not been numbered 1-5 but are marked *a-e* so that they are not confused with question numbers.

HOW TO CHANGE YOUR ANSWER

If you wish to change your answer, ERASE COMPLETELY the already darkened oval by using good quality *pencil eraser* and then blacken the new oval for your revised answer choice. While changing the answer, erasing the earlier answer completely is essential. If it is not erased completely, smudges will be left on the erased oval and the question will be read as having two answers and will be ignored or no credit may be given.

Note the correctly filled answer sheet below. Questions 1, 2, 3 and 4 have been answered, where answer choices are 5, 1, 2 and 1 respectively.

1 () () () () ()	11 () () () () ()	21 () () () () ()
2 () () () () ()	12 () () () () ()	22 () () () () ()
3 () () () () ()	13 () () () () ()	23 () () () () ()
4 () () () () ()	14 () () () () ()	24 () () () () ()
5 () () () () ()	15 () () () () ()	25 () () () () ()
6 () () () () ()	16 () () () () ()	26 () () () () ()
7 () () () () ()	17 () () () () ()	27 () () () () ()
8 () () () () ()	18 () () () () ()	28 () () () () ()
9 () () () () ()	19 () () () () ()	29 () () () () ()
10 () () () () ()	20 () () () () ()	30 () () () () ()

Section Two

VERBAL REASONING TESTS

In this section you will get familiar with the several types of verbal reasoning tests which are usually asked at competitive examinations. These tests use words, letters and digits and require logical, common-sense reasoning and a reasonable knowledge of the English language.

2.1 Verbal Analogies

These questions have a form similar to the following example.

Example: You are given a pair of words in capital letters, followed by 5 lettered pairs of words. Choose the pair which best expresses a relationship similar to that expressed by the original pair (given in capital letters here),

DARK : LIGHT :: _____ : _____

(a) Thin : slim

(b) Stout : strong

(c) Germs : disease

(d) Tree : forest

(e) Hot : cold

The first step is to study the pair of words,

DARK : LIGHT

The colon, ':', signifies that they are related in some way. What is the relationship? It is clear that they are opposites (antonyms). Now look for a pair from among the answer choices that has the same relationship between the two words.

The answer is (e) Hot : Cold

DARK : LIGHT :: HOT : COLD

'DARK' is related to 'LIGHT' in the same way as 'HOT' is related to 'COLD'.

HINTS FOR ANSWERING VERBAL ANALOGY QUESTIONS

1. Establish the Relationship Between the Given Pair

Example: WRITER : BOOK :: _____ : _____

(a) Building : architect

(b) Poem : poet

(c) Gold ring : goldsmith

(d) Chair : carpenter

(e) Composer : song

Before looking at the answer choices, look for the *primary relationship* between the given pair of items, 'WRITER : BOOK'. The relationship clearly is that the 'WRITER' creates a 'BOOK'. After determining the relationship between the given pair, look for the pair of items with a similar relationship from among the answer choices. Make your final decision after going through all the answer choices.

2. The Sequence of Items in the Question Pair is Important

In the above example, all the answer choices contain a person and the article he creates or produces. In the question pair, 'WRITER : BOOK', the person comes first, followed by the article he creates. Therefore, in the correct answer, the person must come first. The only answer that satisfies this condition is (e) Composer : Song. It is, therefore, often necessary to examine the sequence of items to choose from answers that all match the primary relationship.

3. The Grammatical Relationship is Important

Examine the following examples,

Example: FRIEND : GOOD :: _____ : _____

- | | |
|-------------------------|---------------------|
| (a) Dictatorship : evil | (b) Ally : strength |
| (c) Foe : dangerously | (d) Satan : sin |
| (e) Enemy : bad | |

The question pair is a noun (person) and a descriptive adjective. The parts of speech of the correct answer pair must also be the same as that of the question pair. Hence, the correct answer is (e)

Enemy	:	Bad
(noun)		(adjective)

WORD ANALOGIES

Word analogies test your ability to see the relationships between words, distinguish between types of relationships and recognise which relationships are similar. These questions are asked in different forms.

Form 1 Directions: From the pairs of words (a-e) you are to select the pair which is related in the same way as the words of the first pair;

SCISSORS : CLOTH :: _____ : _____

- | | |
|-------------------|----------------------|
| ✓ (a) Axe : wood | (b) Stone : grinder |
| (c) Knife : stone | (d) Roller : flatten |
| (e) Gun : hunt | |

Answer: (a) A pair of scissors cuts cloth as an axe cuts wood.

Form 2 FOOD is to HUNGER as SLEEP is to _____?

- | | |
|---------------|-----------|
| (a) Rest | (b) Night |
| (c) Dream | (d) Bed |
| (e) Weariness | |

Answer (e) Food relieves hunger as sleep relieves weariness.

Form 3 KITE : BIRD as _____ : FISH

- | | |
|---------------|----------|
| (a) Thread | (b) Boy |
| (c) Submarine | (d) Crow |
| (e) Snake | |

Answer (c) A kite and a bird both move through air as a submarine and a fish both move through water.

The relationships in word analogies fall into several categories. For example, in 'ARCHITECT : BUILDING', the relationship is that of 'PRODUCER : PRODUCT'. Most word analogies fit into a small number of such categories. If you know these categories and learn to recognise them rapidly, you will be able to solve word analogy questions accurately and rapidly. Several possible types of relationships have been identified and covered below. You do not need to remember the names of these types. You must only understand the relationship and be able to solve the few practice tests given at the end.

Antonym (opposite) Relationship

Example EXEMPT : OBLIGED :: _____ : _____

- | | |
|----------------------------|--------------------------|
| (a) Affluent : fluent | (b) Immune : susceptible |
| (c) Vilant : mighty | (d) Steadfast : reputed |
| (e) Cavalier : presumption | |

Answer (b) 'Exempt' means free from obligation or liability. 'Oblige' means the opposite. The relationship is opposite. 'Immune' means protected from and 'susceptible' means the opposite.

Exercise

1. DESULTORY : METHODICAL :: _____ : _____

- | | |
|-------------------------------|-------------------------------|
| (a) Integral : unified | (b) Verbose : loquacious |
| (c) Attenuated : actuated | (d) Dissipated : concentrated |
| (e) Plaintive : contemplative | |

2. ALLEVIATE : AGGRAVATE :: _____ : _____

- | | |
|-------------------------|---------------------|
| (a) Joke : worry | (b) Elevate : agree |
| (c) Alluvial : gravelly | (d) Level : grade |
| (e) Elastic : rigid | |

3. FORTUITOUS : INHERENT :: _____ : _____

- | | |
|--------------------------------|------------------------------|
| (a) Rugged : endurable | (b) Legible : indelible |
| (c) Envious : desire | (d) Gregarious : introverted |
| (e) Knowledgeable : incoherent | |

4. OPAQUE : TRANSPARENT :: _____ : _____

- | | |
|-------------------------------|--------------------------|
| (a) Turbid : swollen | (b) Tipid : seething |
| (c) Imprisoned : incarcerated | (d) Forlorn : despondent |
| (e) Concentrated : dissipated | |

Answers 1.(d) 2.(c) 3.(d) 4.(e)

Synonym Relationship

Example ENCUMBER : BURDEN :: _____ : _____

- | | |
|-----------------------------|--------------------------|
| (a) Workload : weariness | (b) Behead : sum up |
| (c) Recapitulate : synopsis | (d) Reconcile : alienate |
| (e) Reptile : poisonous | |

Answer (c) 'Encumber' and 'Burden' are synonyms. Similarly 'Recapitulate' is a synonym for 'Synopsis'.

Exercise

1. MOUNTEBANK : QUACKERY :: _____ : _____

- | | |
|-------------------------|----------------------------|
| (a) Fiery : acquiver | (b) Water : sailing |
| (c) Embezzler : fraud | (d) Politician : nonfeance |
| (e) Huckster : thievery | |

2. PUBLICATION : LIBEL :: _____ : _____

- | | |
|-----------------------------|-------------------------|
| (a) Newspaper : editorial | (b) Radio : television |
| (c) Information : liability | (d) Journalism : attack |
| (e) Speech : slander | |

3. KIND : BENEVOLENT :: _____ : _____

- | | |
|----------------------------|---------------------------------|
| (a) Requital : reverberate | (b) Reverent : imprudent |
| (c) Incautious : sagacity | (d) Circumspect : short-sighted |
| (e) Muddy : Unclear | |

4. ESCAPE : ABSCOND :: _____ : _____

- | | |
|-----------------------|-----------------------|
| (a) Endless : eternal | (b) Escalate : weaken |
| (c) Flee : surrender | (d) Confront : submit |
| (e) Exult : jubilate | |

Answers 1.(c) 2.(e) 3.(e) 4.(a)

Explanations

1. Mountebank engages in quackery and embezzler engages in fraud.
2. Libel is written defamation, slander is oral defamation.
3. Kind and benevolent are synonyms as muddy and unclear.
4. Escape and abscond are nearly similar in meaning as endless and eternal.

Cause and Effect Relationship

Example EMBROIL : STRIFE :: _____ : _____

- | | |
|------------------------------|----------------------------|
| (a) Counteract : performance | (b) Infiltrate : cull |
| (c) Indemnify : reduction | (d) Arbitrate : settlement |
| (e) Predicate : conclusion | |

Answer (d) As embroil results in strife, similarly arbitration results in settlement.

Exercise

1. IRRITANT : ANNOYANCE :: _____ : _____

- | | |
|---------------------------|--------------------------------|
| (a) Stimulus : incitement | (b) Soporific : sanctification |
|---------------------------|--------------------------------|

(e) Caustic : invigorate

(d) Repereussion : inhibition

(e) Coagulant : glut

2. RACE : FATIGUE :: _____ : _____

(a) Fast : hunger

(b) Track : athlete

(e) Ant : bug

(d) Air : sleep

(e) Walking : running

3. INSULT : HUMILIATE :: _____ : _____

(a) Shoot : kill

(b) Abuse : disrespect

(e) Dog : bark

(d) Injury : pungent

(e) Proscribe : banishment

4. MOSQUITO : MALARIA :: _____ : _____

(a) Diabetes : mellitus

(b) Digastric : dysgenic

(c) AIDS : virus

(d) Dysenteric : diatase

(e) Infection : disease

Answers 1.(a) 2.(a) 3.(a) 4.(e)

Explanation

1. Irritant causes annoyance and a stimulus causes incitement.

2. Race causes fatigue and fast results in hunger.

3. Insult results in humiliation as shooting kills.

4. Mosquito causes malaria and infection is the cause of every disease.

Worker and Article Relationship*Example* EDITOR : NEWSPAPER :: _____ : _____

(a) Table : carpenter

(b) Journal : journalist

(c) Author : novel

(d) Blacksmith : furnace

(e) Typist : tabulation

Answer (c). As an editor edits and creates a Newspaper, similarly an Author writes a Novel. In the choices a and b, the relationship is correct but the sequence does not match that of the word pair given in capital letters.

Exercise

1. SCULPTOR : BUST :: _____ : _____

(a) Poem : poet

(b) Driver : toyota

(c) Composer : symphony

(d) Scholar : research

(e) Painting : Mona Lisa

2. ARCHITECT : BUILDING :: _____ : _____

(a) Electrician : voltmeter

(b) Engincer : blue-print

(c) Goldsmith : wedding ring

(d) Judge : courtroom

(e) Bacteriologist : microbiology

3. CARPENTER : FURNITURE :: _____ : _____

(a) Book : author

(b) Magazine : editor

(c) Cook : soup

(d) Dam : civil engineer

(e) Producer : distributor

4. WRITER : TEXT BOOK :: _____ : _____

(a) Building : architect

(b) Book : publisher

(c) Tailor : wedding suit

(d) Book : book-binder

(e) Hair-dresser : hair-setting

Answers 1.(c) 2.(c) 3.(c) 4.(c)**Worker and Tool Relationship***Example* SURGEON : FORCEPS :: _____ : _____

(a) Refugee : asylum

(b) Buoy : channel

(c) Caucasian : saxon

(d) Doctor : prescription

(e) Blacksmith : hammer

Answer (e). A surgeon uses a forceps; similarly a blacksmith uses a hammer.*Exercise*

1. WRITER : PEN :: _____ : _____

(a) Pencil : eraser

(b) Ball-point Pen : note-book

(c) Typewriter : paper

(d) Carpenter : saw

(e) Gun : hunter

2. DRIVER : FORKLIFT :: _____ : _____

(a) Fireman : engine

(b) Conductor : bus

(c) Tailor : sewing machine

(d) Furnace : blacksmith

(e) Blitz : editor

3. ELECTRICIAN : VOLTMETER :: _____ : _____

(a) Carpenter : wood

(b) Tailor : cloth

(c) Cook : food

(d) Teacher : pupil

(e) Hunter : gun

4. STETHOSCOPE : MEDICAL PRACTITIONER :: _____ : _____

(a) Doctor : medicines

(b) Surgeon : operation theater

(c) Thermometer : doctor

(d) Matiny Idol : silver screen

(e) Cobbler : leather shoe

Answers 1.(d) 2.(c) 3.(e) 4.(c)**NOTE:** In most answer choices here, the relationship is in agreement with that of the question pair (words in capital), but the sequence does not match that of the question pair.**Tool and Object Relationship**

This is the relationship of the tool with the object on which it works:

Example SCISSORS : CLOTH :: _____ : _____

(a) Pen : ink

(b) Refrigerator : ammonia

- (c) Collectively : selectively (d) Tantamount : equivalent
 (e) Basic : fundamental
3. IRRITATED : EXASPERATED :: _____ : _____
 (a) Stolid : sordid (b) Pubescent : mature
 (c) Abounding : glutted (d) Overdue : redundant
 (e) Contemptuous : contemptible
4. CHOP : MINCE :: _____ : _____
 (a) Fry : bake (b) Meat : cake
 (c) Axe : mallet (d) Stir : beat
 (e) Vegetables : soup

Answers 1.(c) 2.(b) 3.(c) 4.(d)

Explanation

1. Zephyr is a milder wind than gale. Trickle is a smaller flow of liquid than torrent.

2. Seldom means not very often. Rarely is more extreme than seldom. Often means quite frequent but usually is more extreme in meaning, i.e., most of the time.

3. A person irritated very greatly would be exasperated. A market abounding with wheat would have plenty of wheat, but not as much as a market glutted with wheat.

4. Mince is to cut finer than to chop. To beat is more extreme than to stir.

Classification Relationship

Classification of words can be biological, chemical, physical or on any other basis. The first term in the question pair is related to the second term based on their classifications. For instance, Table and Chair can be put under the class of Furniture.

Example COW : MAMMAL

- (a) Buffalo : cattle (b) Beef : mutton
 (c) Sheep : wool (d) Deer : venison
 (e) Snake : reptile ✓

Answer : (c) A cow is classified as a Mammal and a snake as a reptile.

Exercise

1. TOADS : AMPHIBIAN :: _____ : _____
 (a) Frogs : salamanders (b) Larvae : caecillans
 (c) Caterpillars : butterfly (d) Lobsters : crustaceans
 (e) Fishes : urodeles
2. DRUPES : RASPBERRIES :: _____ : _____
 (a) Peaches : cherries (b) Blackberries : peaches
 (c) Halophyte : sea lavender (d) Walnuts : peanuts
 (e) Olive : plum
3. LEGUME : BEANS :: _____ : _____
 (a) Cloves : chilli (b) Carrot : oyster

(c) Osprey : ostrich

(d) Fishes : starfish

(e) Shrubs : leaves

4. BUFFALO : MILCH-CATTLE :: _____ : _____

(a) Cow : goat

(b) Man : mammal

(c) Bull : cow

(d) Vertebrate : reptiles

(e) Metallic : mercury

Answers 1.(d) 2.(c) 3.(d) 4.(b)

Classification here pertains to botanical and zoological classification of Plant and Animal kingdoms.

Functional Relationship

Example JUDGE : HEARINGS :: _____ : _____

(a) Jury : court

(b) Lawyer : evidence

(c) Jurisprudence : advocate

(d) Senator : legislations

(e) Tribunal : reconciliation

Answer: (d) As a Judge participates in court hearings, similarly Senator legislates.

Exercise

1. BALLAST : STABILITY :: _____ : _____

(a) Spring : resiliency

(b) Flotation : airless

(c) Armour : obduracy

(d) Fuel : thermals

(e) Spinnaker : seaworthiness

2. EQUIVOCATION : MISLEADS :: _____ : _____

(a) Misdirection : intrigues

(b) Rebuttal : confuses

(c) Elucidation : clarifies

(d) Interrogation : answers

(e) Extrapolation : reverses

3. DOCTOR : DISEASE :: _____ : _____

(a) Miser : money

(b) Illness : prescription

(c) Sheriff : crime

(d) Theft : punishment

(e) Intern : hospital

4. TONGS : HOLD :: _____ : _____

(a) Surgeon : scalp

(b) Carpenter : hand-saw

(c) Scissors : cut

(d) Pen : note-book

(e) Eraser : pencil

Answers 1.(a) 2.(c) 3.(c) 4.(c)

Explanation

1. Ballast is heavy material which gives stability to a ship. Springs provide resiliency to a car.

2. Equivocation means use of ambiguous expressions which mislead. Similarly elucidation is throwing light upon something, which clarifies the subject.

3. A doctor's function is to eliminate disease. Similarly a Sheriff seeks to eliminate crime.

4. Tongs are used to hold something and a pair of scissors is used to cut.

Sex Relationship

Example DOG : BITCH :: _____ : _____

(a) Woman : lady

(b) Boy : girl

(c) Stallion : horse

(d) Buffalo : cow

(e) Duck : drake

Answer (b) Female and Male relationship. The order is important.

Exercise

1. STALLION : MARE :: _____ : _____

(a) Goose : rat

(b) Fish : prawn

(c) Crow : hen

(d) Reptile : snake

(e) Emperor : empress

2. STAG : DEER :: _____ : _____

(a) Otter : ostrich

(b) Ox : bull

(c) Mare : horse

(d) Duck : duckling

(e) Bull : cow

3. SPINSTER : BACHELOR :: _____ : _____

(a) Kingfisher : hedgehog

(b) Rooster : chicken

(c) Fox : vixen

(d) Human : child

(e) Cow : bull

4. BRIDE : BRIDEGROOM :: _____ : _____

(a) Lion : cub

(b) Calf : herd

(c) Husband : wife

(d) Swan : cygnet

(e) Mare : stallion

Answers 1.(e) 2.(e) 3.(e) 4.(e)

Sequential Relationship

Example EIGHT : NINE :: _____ : _____

(a) Ten : nine

(b) Six : twelve

(c) 2^3 : 3^2

(d) Four : 2

(e) Eight : eighty

Answer: (c) Eight is followed by Nine in the same way that 2^3 , which is eight, is followed by 3^2 , which is nine.

Exercise

1. 20 : 21 :: _____ : _____

(a) A : C

(b) 10 : 9

(c) M : N

(d) 20 : 40

(e) 5 : 10

2. DAWN : TWILIGHT :: _____ : _____

(a) Night : day

(b) Nine : ninety

✓(c) Prologue : epilogue

(d) Day : evening

(e) Ten : twenty

3. SUMMER : WINTER :: _____ : _____

(a) Monday : saturday

✓(b) Monday : tuesday

(c) Sunday : holiday

(d) Spring : summer

(e) Conclusion : Inception

4. INCEPTION : CONCLUSION :: _____ : _____

(a) Death : birth

(b) Day : night

(c) Afternoon : morning

✓(d) Summer : monsoon

(e) January : march

Answers: 1.(c) 2.(c) 3.(b) 4.(b)*Explanations*

1.(c) As 21 follows 20, N follows M.

2.(c) Dawn represents beginning of day and twilight represents end of day. Similarly, a prologue comes at the beginning of the book and epilogue at the end of a book.

3.(b) As summer precedes winter, Monday precedes Tuesday.

4.(b) 'Conclusion' follows 'Inception', in the same manner as 'night' follows 'day'.

Age Relationship*Example* LION : CUB :: _____ : _____

(a) Rooster : chicken

(b) Fox : vixen

(c) Daisy : rose

(d) Human : child ✓

(e) Horse : mule

Answer: (d) Cub is a young Lion, a child is a young human.*Exercise*

1. HARE : LEVERET :: _____ : _____

(a) Gander : goose

(b) Radiolaria : larvae

(c) Proboscidea : elephants

(d) Horse : stallion

(e) Cow : calf ✓

2. DUCK : DUCKLING :: _____ : _____

(a) Child : man

(b) Girl : woman

✓(c) Frog : tadpole

(d) Deer : gang

(e) Giraffe : zebra

3. CATERPILLAR : BUTTERFLY :: _____ : _____

(a) Fish : brace

(b) Cock : hen

✓(c) Callow : maturity

(d) Swan : cygnet

(e) Child : baby

4. CYGNET : SWAN :: _____ : _____

(a) Monotremata : dynasties

(b) Frog : toad

(c) Shrub : flower

(d) Rat : goose

(e) Cub : lion

Answer: 1.(e) 2.(c) 3.(c) 4.(e)

Association Relationship

Example: CAT : FELINE ::

(a) Horse : equine

(b) Tiger : carnivorous

(c) Bird : vulpine

(d) Chair : furniture

(e) Sit : recline

Answer (a) Feline means relating to cats, Equine means relating to horse.

Exercise

1. DEVIL : WRONG :: _____ : _____

(a) Colour : sidewalk

(b) Slipper : state

(c) Ink : writing

(d) Picture : bed

(e) Repose : synergist

2. ALCHEMIST : GOLD :: _____ : _____

(a) Druggist : chemistry

(b) Computer : COBOL

(c) Abrasion : oil

(d) Insignia : segregation

(e) Flexible : rigid

3. TIME : CLOCK :: _____ : _____

(a) Hair spring : wrist watch

(b) Date : calendar

(c) Sincerity : disloyal

(d) Sharp : blunt

(e) Nip : crush

4. ASSISTANT : FILES :: _____ : _____

(a) Fever : temperature

(b) Constitution : code

(c) Revival : time

(d) Farmer : tractor

(e) Sewing Machine : singer

Answers: 1.(c) 2.(b) 3.(b) 4.(d)

Explanations

1. (c) 'Ink' is associated with 'writing', as the 'devil' is with 'wrong'.

2. (b) 'Alchemist' is associated with 'gold', as the 'computer' is with 'COBOL'.

3. (b) As 'clock' shows 'time', 'calendar' shows 'dates'.

4. (d) 'Assistant' has the same association with 'files', as 'farmer' has with 'tractor'.

Characterization Relationship

The first term characterizes or is characterized by the second term. The first term may be a person, place or thing. Characterization can be *proper* or *opposite*:

Example HOST : HOSPITABLE :: _____ : _____

(a) Artist : imitative

(b) Guest : rude

(c) Humanitarian : altruistic

(d) Idealist : cynical

(e) Pollyanna : pessimistic

Answer (c) As a host is supposed to be hospitable, in the same way, a humanitarian is expected to be altruistic.

Exercise

1. DIPLOMAT : TACTLESS :: _____ : _____

(a) Starveling : weak

(b) Boor : offensive

(c) Charlatan : guileful

(d) Coward : intrepid

(e) Acrobat : agile

2. INDOLENCE : BEAVER :: _____ : _____

(a) Joviality : hyena

(b) Passivity : cow

(c) Ferocity : lamb

(d) Elegance : peacock

(e) Wisdom : owl

3. VINDICTIVENESS : FELLOWSHIP :: _____ : _____

(a) Venality : probity

(b) Equality : stability

(c) Rancour : surliness

(d) Fortitude : patience

(e) Pollution : wastes

4. NEUTRALITY : PARTICIPANT :: _____ : _____

(a) Passivity : activist

(b) Gender : sensitivity

(c) Repose : synergist

(d) Complexity : clarity

(e) Entropy : philanthropy

Answers : 1.(d) 2.(c) 3.(a) 4.(a)

Explanation

1. An example of opposite characterization. No one would expect a diplomat to be tactless. Similarly, a coward cannot be expected to be intrepid.

2. Indolence is the opposite characterisation of the busy, industrious beaver. Similarly ferocity is the opposite characterisation of the easily frightened lamb.

3. Vindictiveness is not a characteristic of fellowship and probity is not a characteristic of probity.

4. Neutrality does not characterise someone who is a participant in a struggle or fight, etc. Passivity does not characterise someone who is active in dealing with social values.

Symbolic Relationship

Example: MACE : MAJESTY :: _____ : _____

(a) King : crown

(c) Degree : knowledge

(e) House : security

Answer (c). A mace is a symbol of majesty. A degree signifies that a person has graduated.

Exercise

1. GREEN : CLEAR :: _____ : _____
 (a) Blue : black (b) Red : roses
 (c) Red-cross : hospital (d) Cross : church
 (e) Altar : worship
2. CROWN : MONARCHY :: _____ : _____
 (a) Flag : army (b) Tricolour : freedom
 (c) Insignia : quality (d) Trade Mark : hallmark
 (e) Swastika : fortune
3. STARS : RANK :: _____ : _____
 (a) Stars : fortune (b) Sky : milkyway
 (c) Silver lining : rainbow (d) Red : danger
 (e) Clear : green
4. BLACK : SORROW :: _____ : _____
 (a) Black : funeral (b) Red : blood
 (c) Victoria Cross : bravery (d) Christianity : cross
 (e) Crusade : religion

Answers : 1.(c) 2.(e) 3.(d) 4.(c)

Explanation

1. Green light/flag signifies road/traffic clear sign. The Redcross symbolises a hospital.
2. Crown signifies authority of the Monarch and Swastika sign symbolises fortune and luck.
3. Stars in the Army signify rank and Red signifies danger.
4. Black colour symbolises sorrow and Victoria Cross is token of Bravery. In (d) relationship is correct but sequence is not matching the question pair.

Raw Material and Finished Product Relationship

- Example** ORANGE : MARMALADE :: _____ : _____
- | | |
|------------------------|----------------------|
| (a) Potate : vegetable | (b) Jelly : jam |
| (c) Cake : pastry | (d) Tomato : ketchup |
| (e) Sandwich : ham | |

Answer (d) Marmalade is a product made from oranges as Ketchup is made from tomatoes.

Exercise

1. HAM : PORK :: _____ : _____
 (a) Pickle : sardine (b) Jelly : sandwich
 (c) Ingredients : curry (d) Chocolate : coffee
 (e) Wine : grapes
2. NOODLES : FLOUR :: _____ : _____
 (a) Snacks : breakfast (b) Tomato : gravy

- (c) Beans : coffee (d) Vegetables : pickles
 (e) Thread : cotton
3. COCOA : CHOCOLATE :: _____ : _____
 (a) Coconut : toned milk (b) Butter : milk
 (c) Sardine : fish (d) Crunchy : crackers
 (e) Wax : candles
4. JELLY : GELATINE :: _____ : _____
 (a) Cake : fruits (b) Palm : pickle
 (c) Fruit : ice-cream (d) Butter : sandwich
 (e) Iodex : iodine

Answers : 1.(e) 2.(e) 3.(e) 4.(e)

Explanations

1. (e) Ham is preserved pig meat; pork is fresh pig meat; wine is made by processing and preserving grapes.
 2. (e) Noodles are made from flour; thread is made from cotton.
 3. (e) Cocoa is used to make chocolate; wax is used to make candles.
 4. (e) Jelly is made of Gelatine; Iodex is made of Iodine.

Place Relationship

Example: ITALY : MILAN :: _____ : _____

- (a) Paris : Moscow (b) Moscow : Russia
 (c) Spain : Madrid (d) Manhattan : New York
 (e) Norway : Sweden

Answer: (c) Milan is in Italy as Madrid is in Spain.

Exercise

1. RED FORT : DELHI :: _____ : _____
 (a) Chicago : USA (b) Albany : New York
 (c) Agra : Taj Mahal (d) Chandigarh : Rock Garden
 (e) Delhi : Jama Masjid
2. PUNJAB : AMRITSAR :: _____ : _____
 (a) Golden Temple : Amritsar (b) Moscow : Russia
 (c) India : Asia (d) Agra : Taj Mahal
 (e) Sydney : Australia
3. MIAMI : FLORIDA :: _____ : _____
 (a) Albany : New York (b) Chicago : Albany
 (c) South America : Sydney (d) Chicago : USA
 (e) Film Studio : Pune
4. ROCK GARDEN : CHANDIGARH :: _____ : _____
 (a) Delhi : JNU (b) New Delhi : AIIMS
 (c) Chandigarh : PGI (d) Film Studio : Pune
 (e) Delhi : Kutab Minar

Answers: 1.(b) 2.(d) 3.(a) 4.(d)

Explanation

1. Red Fort is in Delhi, Albany is in New York.
2. Amritsar is in Punjab, Taj Mahal is in Agra.
3. Miami is in Florida, Albany in New York.
4. Rock Garden is in Chandigarh, Film Studio is in Pune.

Now that you have covered the various types common word analogies, attempt the following test and write down your answers. Compare them with the answers given after the test.

Study the explanation given with each answer. Even if you got the answer correct, a study of the explanation will bring out the correct *way* of arriving at the answer.

PRACTICE TESTS - Questions 1-50 in the following pages.

ANALOGIES - PRACTICE TESTS

DIRECTIONS : In each of the questions below, a related pair of words in capital letters is followed by five pair of words (a-e). Select that lettered pair that expresses the relationship that is MOST similar to that of the capitalised pair:-

1. **FURY : IRE :: _____ : _____**
 - (a) Cry : whisper
 - (b) Dispassion : emotion
 - (c) Joke : laugh
 - (d) Amusement : happiness
 - (e) convulsion : spasm
2. **INK : PAPER :: _____ : _____**
 - (a) Pen : pencil
 - (b) Paint : painting
 - (c) Chalk : blackboard
 - (d) Carbon paper : ballpoint pen
 - (e) Feltboard : drawing pins
3. **REMORSE : ABSOLUTION :: _____ : _____**
 - (a) Evasion : suspicion
 - (b) Horror : sympathy
 - (c) Disdain : corruption
 - (d) Banter : passion
 - (e) Serious : humour
4. **VANDALISM : PROPERTY :: _____ : _____**
 - (a) Implication : crime
 - (b) Embezzlement : fraud
 - (c) Perjury : testimony
 - (d) Malpracticing : cheating
 - (e) Testify : reputation
5. **FLOW-SHEET : MANUFACTURER :: _____ : _____**
 - (a) Formula : product
 - (b) Blue print : architect
 - (c) Cameraman : film
 - (d) Scenario : writer
 - (e) Script : actor
6. **GOOD : EXCELLENT :: _____ : _____**
 - (a) Bad : immoral
 - (b) Caution : careless
 - (c) Hill : mountain
 - (d) Jealousy : respect
 - (e) Sickness : medicines
7. **NITROGEN : GASEOUS :: _____ : _____**
 - (a) Oxygen : organic matter
 - (b) Lead : heavy
 - (c) Feather : weightless
 - (d) Mercury : fluid
 - (e) Nitrogen : stale food
8. **INCANDESCENT : GLOWING :: _____ : _____**
 - (a) Candle : light
 - (b) Flash : flame
 - (c) Tedious : bore
 - (d) Boor : oafish
 - (e) Indefatigable : untiring
9. **EDITOR : MAGAZINE :: _____ : _____**
 - (a) Novel : writer
 - (b) Poem : poet
 - (c) Chair : carpenter
 - (d) Director : film
 - (e) Psychiatrist : neurotic

10. DETERIORATION : RUST :: _____ : _____
 (a) Iron : water (b) emaciation : debilitation
 (c) Depression : unemployment (d) Recession : inefficiency
 (e) Promulgation : legislation
11. INTELLIGENSIA : ELITIST :: _____ : _____
 (a) I.Q. : Intelligent (b) Outershell : sea-shell
 (c) Rabble : plebeian (d) Gentry : public
 (e) Commonality : common class
12. TEDIOUS : BORING :: _____ : _____
 (a) Boor : oafish (b) Pressing : crushing
 (c) Poor : poverty (d) incorgruous : consistent
 (e) Indefatigable : untiring
13. ELEVATED : EXALTED :: _____ : _____
 (a) Promoted : excellence (b) Raise : commensurate
 (c) Dirty : filthy (d) disorderly : unfaithful
 (e) Purified : hygienic
14. TICKET : ADMISSION :: _____ : _____
 (a) School : book (b) Strong : moral
 (c) Neck : collar (d) Coat : pocket
 (e) Money : luxuries
15. MUSIC : HARMONIUM :: _____ : _____
 (a) Novel : writer (b) Words : word-processor
 (c) Author : book (d) Water : tank
 (e) Guitar : sound
16. ENERGY : DISSIPATE :: _____ : _____
 (a) Charge : battery (b) Food : temperature
 (c) Money : squandor (d) Power : generator
 (e) Atom : explosion
17. COMMANDER : COMMANDS :: _____ : _____
 (a) surgeon : diagnosis (b) Senator : legislates
 (c) Checks : teacher (d) Aerates : aviator
 (e) Specific : responses
18. FORMULA : CONSTITUENT :: _____ : _____
 (a) Verdict : sentence (b) Rocket : pilot
 (c) Carburator : mixture (d) Binominal : monocular
 (e) Equation : term
19. LUGUBRIOUS : SORROWFUL :: _____ : _____
 (a) Unhappy : gloomy (b) Lustrous : luscious
 (c) Credible : incredible (d) Euphoric : cheerful
 (e) Frenzied : excited

20. **GLOVE : HAND :: _____ : _____**
 (a) Neck : collar (b) Tie : shirt
 (c) Shoe : lace (d) Coat : pocket
 (e) Socks : feet
21. **STUDENT : MARKS :: _____ : _____**
 (a) Teacher : class (b) Pen : nib
 (c) Scholar : book (d) Discipline : student
 (e) Waiter : tip
22. **KNOB : DOOR :: _____ : _____**
 (a) Shoe : socks (b) Belt : trousers
 (c) Nose : face (d) Necklace : neck
 (e) Ring : ear
23. **PRIMEVAL : MEDIEVAL :: _____ : _____**
 (a) Snow : ice (b) Thorn : rose
 (c) Evolution : revelation (d) Gorilla : soldier
 (e) Dinosaur : dragon
24. **DEplete : ENervate :: _____ : _____**
 (a) Strengthen : weak (b) Invigorate : tired
 (c) Exhaust : enfeeble (d) Tighten : loosen
 (e) Weariness : restless
25. **LIGHT : CANDLE :: _____ : _____**
 (a) Exercise : strength (b) Dieting : over weight
 (c) Power : battery (d) Heat : coil
 (e) Automobile : engine
26. **EMBARRASS : HUMILIATE :: _____ : _____**
 (a) Difficult situation : painful (b) Annoy : exasperate
 (c) Gamble : investment (d) Embezzle : peculate
 (e) Enquire : ask
27. **OPERATION THEATRE : SURGERY :: _____ : _____**
 (a) Judge : lawyer (b) Doctor : disease
 (c) Settlement : client (d) School : classes
 (e) Court : litigation
28. **OVERLOOK : ABERRATION :: _____ : _____**
 (a) Conviction : criminal (b) Error : omission
 (c) Condone : offence (d) Careless : loyalty
 (e) Mitigate : penitence
29. **TRILOGY : NOVEL :: _____ : _____**
 (a) Rice : husk (b) Milk : cream
 (c) Fabric : weaving (d) Gun : cartridge
 (e) Serial : episode

30. IMPLICATE : INCRIMINATION :: _____ : _____
 (a) Perjury : fraud (b) Embezzlement : charge
 (c) Exonerate : acquittal (d) Involve : crime
 (e) Involvement : malpractice
31. HINDALIUM : ALUMINIUM :: _____ : _____
 (a) Iron : lead (b) Carbon : manganese
 (c) Lead : silver (d) Brass : copper
 (e) Gold : antimony
32. PEACEFUL : RESISTANCE :: _____ : _____
 (a) Litigation : lawlessness (b) Coherent : inconsistency
 (c) Dumb : follow (d) Diligent : reliability
 (e) Rough : forceful
33. BALL : THROW :: _____ : _____
 (a) Shuttle cock : racket (b) Ball : bat
 (c) Dog : pat (d) Hockey : ball
 (e) Shoot : rifle
34. JUDGE : ADJUDICATE :: _____ : _____
 (a) Advocate : jury (b) Mediator : reconcile
 (c) Lawyer : client (d) Appellant : implore
 (e) Researcher : emendate
35. PEDANT : ERUDITION :: _____ : _____
 (a) Diplomat : tactless (b) Prude : modesty
 (c) Enemy : friendly (d) Blunt : politician
 (e) Rude : politeness
36. SOLDIER : STAINGUN :: _____ : _____
 (a) Bow : arrow (b) Knight : sword
 (c) Lock : key (d) Horse : cart
 (e) Rifle : trigger
37. VOLCANO : LAVA :: _____ : _____
 (a) Fault : earthquake (b) Death : sorrow
 (c) Delta : river (d) Rock : sand
 (e) Earth : crust
38. INTIMIDATE : WHEEDLE :: _____ : _____
 (a) Extol : disparage (b) Outwordly : truly
 (c) Defile : rebuke (d) Co-ordinate : disinter
 (e) resolute : impetuous
39. CAPRICIOUS : RELIABILITY :: _____ : _____
 (a) Heated : boiling (b) Arbitrary : whimsical
 (c) Tenacious : practicality (d) Unreliable : inhuman
 (e) Extemporaneous : predictability

40. AGREEMENT : DISSENT :: _____ : _____
 (a) Contract : clauses (b) Schism : diverge
 (c) Impasse : concede (d) Touchdown : penalty
 (e) Latitude : resistance
41. EXPEND : REPLENISH :: _____ : _____
 (a) Occupy : re-occupy (b) Encroachment : occupy
 (c) Defect : rejoin (d) Formant : rebellion
 (e) Exhort : encourage
42. LOATH : COERCION :: _____ : _____
 (a) Detest : caressing (b) Irritate : caressing
 (c) Irrate : antagonism (d) Reluctant : persuasion
 (e) Contemplative : meditative
43. SCALES : FISH :: _____ : _____
 (a) Lady : dress (b) Skin : man
 (c) Tree : leaves (d) Bird : feather
 (e) Bear : fur
44. STOOL : BENCH :: _____ : _____
 (a) Chair : table (b) Carpenter : chair
 (c) Foot-rule : yardstick (d) Wood : steel
 (e) Glass : cup
45. APPEAL : REFUSAL :: _____ : _____
 (a) Obesity : over-eating (b) Deny : affirmation
 (c) Try : failure (d) Struggle : victory
 (e) Examination : passing
46. WEIGHT : KILOGRAM :: _____ : _____
 (a) Pint : Liquid (b) Distance : k.m.
 (c) Mile : length (d) Pound : weight
 (e) Bushel : corn
47. WRITER : PEN :: _____ : _____
 (a) Needle : tailor (b) Artist : brush
 (c) Paint : painter (d) Teacher : class
 (e) Saw : carpenter
48. PAIN : MISERY :: _____ : _____
 (a) Disease : poverty (b) Despair : loneliness
 (c) Ignorance : confusion (d) Superstition : peasants
 (e) Ignore : greet
49. PAINTING : ARTIST :: _____ : _____
 (a) Song : singer (b) Musician : music
 (c) Author : novel (d) Cook : meal
 (e) Poem : poet

50. BARREL : VIAL :: _____ : _____

(a) Length : height

(c) Brochure : compiler

(e) Book : readers

(b) Low : high

(d) Book : pamphlet

Answers with Explanation

1. (e) Fury means violent excitement (rage) and Ire is anger. Difference of degree or intensity exists in the question pair. Convulsion is more violent muscular contraction as compared to spasm.
2. (c) Ink is used to write on paper and chalk is used to write on blackboard.
3. (a) To exhibit remorse may result in absolution (freedom from consequences of a previous act) and to respond to questions with evasion may evoke suspicion. Cause and effect relationship.
4. (e) Vandalism is a malicious crime related with property. Perjury (false statement) is a crime connected with testimony.
5. (b) Flow-sheet is prepared by a manufacturer for the guidance of those involved in the manufacturing operations. Blue-print is prepared by the architect to guide the construction people.
6. (e) Excellent is greater in degree than good. Similarly Mountain is higher than hill. Difference of degree relationship.
7. (d) Nitrogen is a gas and Mercury is a liquid. Relation of physical properties of the material.
8. (e) Incandescent is a synonym for glowing. Similarly indefatigable is a synonym for untiring. In pairs (c) and (d), for Tedious there should have been boring and not Boor, and similarly Oaf and not Oafing.
9. (d) The Editor works on the magazine to bring it into shape for presentation to readers. The Director works on the film to make it ready for release to the viewers. Here is the relationship of association. In other choices, the sequence is not matching the question pair.
10. (c) As rust can be caused by deterioration, unemployment can be caused by depression.
11. (c) Intelligensia is characterised as Elitist; Rabble (common class of people) may be characterised as Plebeian (belonging to lower social class of people).
12. (e) Tedious is synonym for boring and Indefatigable is synonym for untiring.
13. (c) Elevated (promoted/advancement) and Exalted both have same meaning but latter is lesser in degree or intensity. Similarly Dirty is a lower degree of uncleanness.
14. (e) A ticket enables admission and money enables to buy luxuries.
15. (b) Music will be produced from a harmonium only if a skilled person plays it. Similarly words will be processed if a skilled operator uses word-processor. Choice (e) could have been correct if words were in reverse order to match the question pair sequence.
16. (c) Energy can be wasted or dissipated just as money can be wasted or squandered.
17. (b) The primary function of the commander is to command. Similarly a senator legislates. This is a functional relationship.
18. (e) Constituent is one of the components of a formula. Similarly, Term is the constituent of an Equation. Whole and part relationship.
19. (d) Lugubrious is a person more gloomy and a sorrowful person is only gloomy. Similarly as euphoric person has more feelings of well being than a cheerful person. Same meaning words having degree of difference.
20. (e) Just as socks are made to fit and cover the feet, gloves are made to fit and cover the hands.
21. (e) As student gets marks for good work in a test or examination, waiter gets a tip for giving good service.
22. (c) Knob must be on a door, a nose must be on a face.
23. (e) Primeval period is associated with the dinosaur and medieval period with the dragon.
24. (c) Deplete means to exhaust and enervate means to become weak. Exhaust and enfeeble also means the same. The relationship is analogous with degree of difference only.
25. (c) A candle is a source of light as a battery is a source of power.
26. (b) Embarrass and humiliate are similar in meaning but latter is stronger in degree. Same relation exists between annoy and exasperate.
27. (e) Operation theatre is a place where surgery is performed and court is a place for settlement of litigations.

28. (c) One can overlook an error or an aberration; one can also pardon (condone) an offence.
29. (e) Trilogy is a work consisting of 3 novels, a serial is a work consisting of a number of episodes (instalments). A whole and part relationship.
30. (c) Incrimination means to charge someone with a crime. To implicate someone in a crime is to connect him with the crime which would lead to his incrimination. To exonerate a person charged with a crime would free him and lead to his acquittal.
31. (d) Hindalium is an alloy from aluminium and brass is an alloy made from copper.
32. (b) A peaceful person does not show resistance, a coherent person is usually well organised and does not show inconsistency.
33. (c) You can throw a ball and pat a dog. Relationship is of action on a subject.
34. (b) A judge adjudicates and a mediator helps in reconciliation. The second term in both cases is a major function of the first term.
35. (b) Pedant relates to a person who attaches too much importance to learning or erudition and prude is a person who displays excessive modesty.
36. (b) A stangun is soldier's weapon like a sword which is a weapon for knight. Functional relationship.
37. (a) Volcano causes lava to flow. Faulting or displacement of earth's crust causes an earthquake. Both are natural occurrences connected with earth.
38. (a) Intimidation is forcing by fear a person to take action, while wheedle is persuading a person by flattery. Extol means praise highly and disparage means to belittle or treat slightly. Pairs of opposite meaning.
39. (c) Capricious behaviour is not characterised by reliability. Extemporaneous actions are not characterised by predictability.
40. (c) An agreement may end if one of the parties to it begins to dissent. An impasse may end if one of the parties will concede a point or points to the other.
41. (c) Expend means to use up, and replenish is to refill. To defect is to desert whereas rejoin means to return to the company of those one has left. An opposite relationship.
42. (d) If someone is loath (unwilling) to do something, coercion (use of force) may be required to change his mind. Similarly, if a person is reluctant, he may be persuaded to change his mind.
43. (b) Scales are external coverings of a fish as skin is external covering of human body. Choice (d) could have been also correct if the word pair should have been "Feather : Bird" so as to match the question pair in sequence.
44. (c) Stool and bench both are for sitting purposes, the difference lies in the size (bench is bigger than stool). Similarly, footrule and yardstick both are for measuring the length, the difference is that the yardstick is bigger than the footrule.
45. (c) When one appeals, one expects an acceptance and not refusal. When one tries, one expects success and not failure. The relationship is negative response to an action.
46. (b) Measurement of weight is expressed in kg as measurement of distance is expressed in km. In answer choices (a) and (c) could have been acceptable if the sequence of the words have been reverse in order to match the question pair.
47. (b) A writer needs pen for his work and an artist needs a brush for his work. Other answer choices have been rejected as they do not follow the sequence of question pair.
48. (c) Pain causes misery and ignorance causes confusion.
49. (c) A painting is made by an artist and poem is created by a poet. In other choices the sequence of word pair is not in line with the question pair.
50. (d) Both the barrel and vial can hold liquid - barrel is bigger in volume than a vial. Similarly, both book and pamphlet consist of pages, the book is much larger in size.

ALPHABET/LETTER ANALOGIES

In letter analogy questions, the Question Pair and Answer Pair consist of letters. You have to examine the Question Pair and find the relationship between them and choose the Answer Pair that contains the same analogy or relationship as in the Question Pair.

Some of the most common analogical relationships between letter pairs are given below. You must understand the relationship and learn to recognise it. You must be able to solve the few exercises given with each type. It is not important to remember the name of the type.

Direct alphabetic sequential relationship

Example : CD : GH :: LM : _____ ?

(a) DC

(b) EG

(c) AB

(d) JI

Answer : (c)

Examine the question pair 'CD : GH'. The letters of the first term 'CD' are in natural alphabetic sequence. As are the letters of the second term 'GH'. The letters 'LM' are also in natural alphabetical sequence. Therefore, a search for an answer where letters are in natural alphabetic sequence will lead you to 'AB'.

Exercises

1. XY : PQ :: MN : _____ ?

(a) TS (b) MO (c) QP (d) ~~BC~~

2. GH : AB :: BC : _____ ?

(a) RT (b) QR (c) ~~RS~~ (d) DF

3. MN : OP :: RS : _____ ?

(a) BH (b) ~~HI~~ (c) MO (d) UW

4. YZ : XY :: AB : _____ ?

(a) ML (b) BD (c) PR (d) ~~PQ~~

Answers : 1.(d) 2.(c) 3.(b) 4.(d)

Opposite alphabetic relationship

Example : DC : HG :: ML : _____

(a) OP (b) ~~NM~~ (c) ~~BA~~ (d) PQ

Answer : (b) and (c). It is clear that the letters in each term are in the reverse of alphabetic sequence. Hence look for an answer where letters are in the reverse alphabetic order.

Note - It is worth remembering that sometimes the directions to questions *do not* specify that there is only one correct answer. In such cases, look out for more than one correct answer and give both for full credit.

Exercises

1. TS : LK :: BA : _____ ?

(a) DE (b) ~~FE~~ (c) GI (d) RP

2. NM : OP :: ZY : _____ ?

(a) MQ (b) YW (c) ~~XW~~ (d) YZ

3. PO : SR :: BA : _____ ?

(a) ZA (b) YZ (c) ~~ZY~~ (d) PL

4. JI : XW :: KJ : _____ ?

(a) PQ (b) QR (c) ~~RQ~~ (d) XY

Answers : 1.(b) 2.(c) 3.(c) 4.(c)

Vowel/Consonant Relationship

Example : ABD : E JL :: _____ . _____

(a) GFH : IPR (b) IPR : URT (c) IPR : OTY (d) ~~IPR~~ : ORT

Answer : (d). Examine the question pair 'ABD : E JL'. The first letters of each term are 'A' and 'E'. These are the first two vowels (AEIOU). A quick look at the answer choices can tell you that you could be on the right track and that the first term of the answer pair will begin with 'I' and that the second term of the answer pair will begin with 'O'. This leaves you with answer choices (c) and (d). Go back to the answer pair and look at the second two letters of each term.

First term: ABD Second term: E JL

You can now look for the pattern which emerges :

First term : B, skip C, D

Second term : J, skip K, L

This pattern clearly eliminates answer choice (c), leaving (d) as the correct answer. A little practice with the following exercises and the steps mentioned above will come to you automatically.

Exercises

1. EFH : ILN :: _____ : _____

(a) ILM : OPQ (b) EGH : IMN (c) ~~OPR~~ : URT (d) OPQ : UBT

2. AXZ : EBD :: _____ : _____

(a) ~~IRT~~ : OWY (b) XYI : MOQ (c) PSI : UXW (d) AOI : UBX

3. BDA : JLE :: _____ : _____

(a) OKT : BCD (b) ~~PRI~~ : LNO (c) MOI : LMO (d) RSI : UVO

4. KME : PRI :: _____ : _____

(a) CDO : EGQ (b) ~~DFO~~ : GIU (c) BDE : EGU (d) BDO : EKM

5. BAC : MIN :: _____ : _____

(a) TOR : LUT (b) PID : KOM (c) ~~PEQ~~ : ROS (d) POQ : RUS

6. CED : GIH :: _____ : _____

(a) JEK : LIM (b) ~~JOK~~ : LUM (c) JAK : LIM (d) JEO : LIM

Answers : 1.(c) 2.(a) 3.(b) 4.(b) 5.(c) 6.(b)

Skip letter Relationship

Example : AB : DE :: _____ : _____

(a) ~~GH~~ : JK (b) HI : RS (c) GH : KL (d) ED : BA

Answer : (a). Examine the question pair 'AB : DE'. The relationship is that the letters are in alphabetic order, with a letter skipped between terms.

Example: AB : FG :: _____ : _____

(a) RS : WX (b) ~~KL~~ : PQ (c) KL : OP (d) JK : MN

Answer: (a) and (b). Examine the question pair 'AB : FG'. The relationship is that the letters are in alphabetic order, with 3 letters shifted between terms.

Example : $\overline{BD} : \overline{EG} :: \underline{\hspace{1cm}} : \underline{\hspace{1cm}}$

(a) $\overline{KM} : \overline{SU}$ (b) $\overline{AB} : \overline{BD}$ (c) $\overline{AC} : \overline{CE}$ (d) $\overline{XY} : \overline{ZY}$

Answer: (a) and (c). Examine the question pair 'BD : EG'. The relationship is that the letters are in alphabetic order, with the intervening letter skipped in each term.

Exercises

1. $\overline{BC} : \overline{FG} :: \underline{\hspace{1cm}} : \underline{\hspace{1cm}}$

(a) $\overline{AD} : \overline{PQ}$ (b) $\overline{HI} : \overline{JK}$ (c) $\overline{JK} : \overline{LM}$ (d) $\overline{HI} : \overline{LM}$

2. $\overline{DE} : \overline{HI} :: \underline{\hspace{1cm}} : \underline{\hspace{1cm}}$

(a) $\overline{DE} : \overline{HJ}$ (b) $\overline{JK} : \overline{LM}$ (c) $\overline{JK} : \overline{NO}$ (d) $\overline{JK} : \overline{OP}$

3. $\overline{EF} : \overline{IJ} :: \underline{\hspace{1cm}} : \underline{\hspace{1cm}}$

(a) $\overline{KL} : \overline{MN}$ (b) $\overline{KL} : \overline{OP}$ (c) $\overline{JK} : \overline{NO}$ (d) $\overline{KL} : \overline{PO}$

4. $\overline{BC} : \overline{GH} :: \underline{\hspace{1cm}} : \underline{\hspace{1cm}}$

(a) $\overline{IJ} : \overline{NO}$ (b) $\overline{CD} : \overline{FG}$ (c) $\overline{HI} : \overline{JK}$ (d) $\overline{IJ} : \overline{MN}$

5. $\overline{CD} : \overline{HI} :: \underline{\hspace{1cm}} : \underline{\hspace{1cm}}$

(a) $\overline{JK} : \overline{PQ}$ (b) $\overline{JK} : \overline{LM}$ (c) $\overline{JK} : \overline{OP}$ (d) $\overline{JK} : \overline{MN}$

6. $\overline{JK} : \overline{OP} :: \underline{\hspace{1cm}} : \underline{\hspace{1cm}}$

(a) $\overline{QR} : \overline{OU}$ (b) $\overline{QR} : \overline{VW}$ (c) $\overline{ST} : \overline{UV}$ (d) $\overline{QR} : \overline{ST}$

7. $\overline{DF} : \overline{GI} :: \underline{\hspace{1cm}} : \underline{\hspace{1cm}}$

(a) $\overline{JL} : \overline{LM}$ (b) $\overline{JL} : \overline{MN}$ (c) $\overline{LM} : \overline{OP}$ (d) $\overline{JL} : \overline{MO}$

8. $\overline{OQ} : \overline{QS} :: \underline{\hspace{1cm}} : \underline{\hspace{1cm}}$

(a) $\overline{ZY} : \overline{ZA}$ (b) $\overline{XZ} : \overline{AC}$ (c) $\overline{RT} : \overline{VW}$ (d) $\overline{ZY} : \overline{ZA}$

9. $\overline{TV} : \overline{UW} :: \underline{\hspace{1cm}} : \underline{\hspace{1cm}}$

(a) $\overline{YX} : \overline{CD}$ (b) $\overline{XZ} : \overline{AC}$ (c) $\overline{XY} : \overline{BC}$ (d) $\overline{DF} : \overline{GH}$

Answers: 1.(d) 2.(c) 3.(b) 4.(a) 5.(c) 6.(b) 7.(d) 8.(b) 9.(b)

Letter Form Relationship

This type of analogy depends on the form of the letter. Look for straight lines, closed and open ends, circles and tails, etc.

Example : $\overline{I} : \overline{T} :: \underline{\hspace{1cm}} : \underline{\hspace{1cm}}$

(a) $\overline{W} : \overline{X}$ (b) $\overline{M} : \overline{V}$ (c) $\overline{L} : \overline{N}$ (d) $\overline{L} : \overline{X}$

Answer: (c). Examine the question Pair 'I : T'. The first term 'I' is composed of one straight stroke. The second term 'T' is composed of two straight strokes.

Examine answer option (a) $\overline{W} : \overline{X}$: 4 strokes : 2 strokes, no pattern.

Examine answer option (b) $\overline{M} : \overline{V}$: 4 strokes : 2 strokes, no pattern.

Examine answer option (c) $\overline{L} : \overline{N}$: 2 strokes : 3 strokes; pattern exists. Increasing number of strokes; $1 : 2 :: 2 : 3$

Examine answer option (d) $\overline{L} : \overline{X}$: 2 strokes : 2 strokes; no pattern. Hence (c) is the answer.

Example : $\overline{b} : \overline{d} :: \overline{p} : \underline{\hspace{1cm}}$

(a) a (b) o (c) q (d) d

Answer: (c). Look at the letters as combinations of straight lines and circles. Look at the positions of the circles and lines.

'b' : circle with line on left, going up

'd' : circle with line on right, going up

'p' : circle with line on left, going down.

You must, therefore, look for a letter with a circle with line on right, going down.

Exercises

1. q : d :: b : _____

☒ (a) p (b) d (c) b (d) j

2. n : m :: u : _____

(a) v (b) t ☒ (c) w (d) x

3. b : p :: d : _____

(a) t (b) j (c) z ☒ (d) g

4. d : g :: b : _____

☒ (a) p (b) b (c) j (d) l

5. n : u :: m : _____

(a) x (b) v ☒ (c) w (d) o

6. b : g :: d : _____

(a) q (b) g ☒ (c) p (d) z

7. F : P :: E : _____

(a) F (b) G ☒ (c) B (d) W

8. N : Z :: M : _____

(a) X (b) R (c) Z ☒ (d) W

9. V : W :: Y : _____

(a) Z (b) G ☒ (c) M (d) Q

Answers: 1.(a) 2.(c) 3.(d) 4.(a) 5.(c) 6.(c) 7.(c) 8.(d) 9.(c)

Jumbled letter Relationship

Example: GNIK : KING :: _____ : _____

☒ (a) NRAEL : LEARN (b) STUDENT : TNEDUTS

(c) TEACHER : REHCHAET (d) WRITE : ETIRW

Answer: (a). Examine the question pair 'GNIK : KING'. The second term (KING) of the question pair is made by reversing the order of the letters of the first term (GNIK). Similarly 'NRAEL' is reverse of 'LEARN'.

Exercises

1. RAGDE : EDGAR :: _____ : _____

(a) LUKE : MATTHEWS

(b) GANDHI : H D N A D I

☒ (c) EGROEG : GEORGE

(d) POLITE : COURTESY

2. WINTER : RETNIW :: _____ : _____

(a) RMMEUS : SUMMER

☒ (b) SPRING : GNIRPS

(c) HEAVEN : GOD

(d) KNIFE : BLADE

3. ENGLISH : HSILGNE :: _____ : _____

(a) SANSKRIT : HINDI

(b) URDU : HINDUSTANI

✓ (c) HINDI : IDNIH

(d) FORETE : COBAL

4. NAMTIP : PITMAN :: _____ : _____

(a) CORNER : RENROC

(b) SIDE : EDIS

(c) DISCOUNT : TNUOCSID

✓ (d) EGAIIRRAM : MARRIAGE

Note: The sequence of terms in Question pair should be the same as in Answer pair.

Answer: 1.(c) 2.(b) 3.(c) 4.(d)

Now that you have covered the various types of alphabet analogies, attempt the test in the following pages and compare your answers with the ones given after the test. Study the explanation given with each answer. Even if you got the answer correct, a study of the explanations will bring out the *correct* way of arriving at the answer.

ALPHABET ANALOGIES - PRACTICE TESTS

DIRECTIONS: Find out the correct letter pair from the alternatives given in answer choices (a-e) below, to donate the same relationship among the group of letters as established between the sets at the top (Question Pair) :-

1. ZA : YB :: XC : _____

(a) YZ

(b) NM

(c) BC

(d) OP

☒ (e) WD

2. ABCD : WXYZ :: EFGH : _____

(a) STVU

(b) STOU

(c) STUE

(d) TSUV

☒ (e) STUV

3. AD : BE :: CF : _____

(a) DE

(b) BC

☒ (e) DG

(d) FG

(e) GD

4. ACDE : Oghi :: ESTU : _____

☒ (a) EPQU

(b) ABCD

☒ (e) OGHK

(d) XYZE

(e) ZXZE

5. BAC : DEF :: _____ NOP

(a) GHI

☒ (b) JHI

☒ (c) GIH

(d) HJI

☒ (e) HIJ

6. CG : EI :: FJ : _____

(a) JK

(b) IJ

(c) LM

(d) GH

☒ (e) GK

7. ACF : EDG :: IEH : _____

(a) OFI

(b) GHI

(c) LMN

(d) EIJ

(e) OFJ

8. AEZ : EIY :: IOX : _____

(a) UYZ

(b) AEX

(c) EIX

☒ (d) OUW

(e) OVW

9. AZB : BYC :: CXD : _____

☒ (a) DWE

(b) DEF

(c) DFG

(d) DMN

(e) DVE

10. BACE : DACE :: FACE : _____

(a) HASE

(c) CASE

(e) HACE

(b) LACE

(d) NACE

11. POLITE : ETILOP :: _____ : _____

(a) ELPMIS : SIMPLE

(c) CHART : TRAHC

(e) SINGLE : ELGNIS

(b) DRAOB : BOARD

(d) WOMEN : WOMAN

12. RT : WZ :: _____ : _____

(a) AC : RU

(c) PR : LM

(e) LN : XZ

(b) AB : PW

(d) TU : WX

13. Z : N :: _____ : _____

(a) H : T

(c) M : N

(e) X : Y

(b) X : E

(d) T : V

14. IJ : KL :: _____ : _____

(a) AB : PQ

(c) LM : OP

(e) RS : TV

(b) AD : GH

(d) MN : OP

15. AZ : BY :: _____ : _____

(a) CX : BW

(c) CX : DW

(e) CY : DW

(b) CW : DY

(d) CZ : DY

16. LLAMS : SMALL :: _____ : _____

(a) CORK : KROC

(c) TREE : EERT

(e) CHART : TRACH

(b) BARK : KRAB

(d) SRENID : DINERS

17. CBA : FED :: _____ : _____

(a) IJH : MNL

(c) FGH : JKO

(e) IHG : KLJ

(b) BCA : FGH

(d) PQS : RTU

18. FED : IHG :: _____ : _____

(a) ACB : GIJ

(c) IJK : LMO

(e) ACB : DFE

(b) TSR : WVU

(d) DEF : IGH

19. CDF : GHJ :: _____ : _____

(a) ABD : PRS

(c) KLM : OQR

(e) GHI : JKO

(b) KLN : OPR

(d) PQR : STU

20. CEH : IKN :: _____ : _____
 (a) CDF : IJK
 (c) EFH : KMN
 (e) ACD : FHJ
 ✓(b) OQT : UWZ
 (d) BCE : GIJ
21. APA : EQE :: _____ : _____
 (a) BQB : FGF
 (c) LML : NON
 (e) PQP : STS
 ✓(b) CDC : GHG
 ✓(d) IRI : OSO
22. AP : EQ :: _____ : _____
 (a) AB : CD
 (c) LM : NO
 ✓(e) IR : OS
 (b) EF : IK
 (d) PQ : RS
23. JAJ : KEK :: _____ : _____
 (a) BAB : DED
 (c) KEK : LIL
 (e) TRT : XZX
 ✓(b) FGI : HIJ
 ✓(d) LIL : MOM
24. AZB : CYD :: _____ : _____
 ✓(a) EXF : GWH
 (c) EFG : HIK
 (e) FZB : CYE
 (b) EGF : HIJ
 (d) EZF : CYH
25. I : V :: N : _____
 (a) H
 (c) T
 ✓(e) W
 (b) X
 (d) Z
26. V : N :: Z : _____
 (a) X
 (c) T
 (e) X
 (b) F
 ✓(d) M
27. V : X :: H : _____
 (a) Y
 (c) I
 (e) M
 (b) T
 ✓(d) Z
28. PS : DG :: _____ : _____
 (a) CE : TR
 ✓(c) EH : TW
 (e) QT : RP
 (b) KM : OQ
 (d) FH : JL
29. BC : GH :: _____ : _____
 (a) RT : XY
 (c) OP : QR
 ✓(e) ST : XY
 (b) ST : UV
 (d) IJ : KL

30. JK : QR :: _____ : _____

(a) ST : UV

(b) WX : ZY

(c) CF : JL

(d) MN : QR

(e) BC : IJ

Answers and Explanation

1. (e) Each pair contains a letter each from backward sequence (Z-A) and forward sequence (A-Z) following the natural alphabetical sequence.

2. (e) First term in question pair consists of 4 letters in forward sequence (A-Z) and the second term consists of 4 letters from the end of the alphabetic order and the sequence remains forward in both cases (A to Z).

3. (c) Each term keeps alphabetic sequence, i.e. A (BC) D, B (CD) E, C (DE) F and D (EF) G. Letters skipped are placed in brackets.

4. (a) Each term in the group of letters has one preceding and one final vowel with two consonant in between.

5. (e) Letters in each item follow the alphabetic sequence with a vowel letter intervening them.

6. (e) Letter groups consist of 2 letters in alphabetic order skipping 3 letters immediately following, i.e. C (DEF) G, E (FGH) I, F (GHI) J and G (HIJ) K.

7. (a) Each item starts with a vowel which maintains the sequence of AEIOU as is seen from other items. After a vowel, 2 letters follow, of which 2 intervening consecutive letters are skipped, i.e. C (DE) F, D (EF) G, E (FG) H and F (GH) I.

8. (d) Each term has two vowels in the beginning, and the first letter from backward sequence. Hence AE (vowels) Z, EI (vowels) Y, IO (vowels) X, OU (vowels) W.

9. (a) Two consecutive letters from forward sequence with an intervening letter from backward sequence. Hence A (Z) B, B (Y) C, C (X) D and D (W) E.

10. (e) Each item has ACE common in all. Between consonants, one is skipped, i.e. after B, C is skipped, and next term starts with D. After D, E is skipped and F starts and after F, G is skipped and H starts.

11. (e) The second term of the question pair is made by reversing the order of the letters of the first term, and the first term consists of a meaningful word.

12. (a) The relationship between first and second terms is that in the first term one letter is skipped and in the second term two letters are skipped.

13. (d) The relationship between first and second terms is that the first term consist of a letter formed by three straight lines and the same scheme is followed in the second term. Therefore the third and fourth terms should have same relationship.

14. (d) Letters follow the natural alphabetic sequence.

15. (c) The first term consist of one letter from forward alphabetic sequence and one letter from the backward sequence (A and Z). The second term contains the second letter of forward sequence and second letter of backward sequence. The same relationship exists in (c).

16. (d) The first term is the reverse of the second term, and the second term should form meaningful word.

17. (e) If we put all letters of the first and second term in alphabetic order, we find unbroken sequence, CBA : GFE = ABC : EFG. Same relationship exists in (e), i.e. IHG : KLJ = GHI : JKL.

18. (b) The letters are in reverse alphabetic order, maintaining uninterrupted sequence. FED : IHG = DEF : GHI. This relationship exists in (b), i.e. TSR : WVU = RST : UVW.

19. (b) Letters follow the natural alphabetic sequence. One letter is skipped in each term. After two consecutive letters, i.e. CD (E) F, GH (I) J and choice (b) continues the series KL (M) N, OP (Q) R.

20. (b) In the first term after C, D is skipped and after E, FG are skipped. Same relationship exists in second term.

21. (d) Two similar vowels having a consonant intervening. Vowels keep the natural order (AEIO) and consonant also keeps natural sequence PQRS.

22. (e) Vowel followed by a consonant. Vowel and consonant follow the alphabetic order.

23. (d) Two similar consonant with an intervening vowel. Both consonants and vowel keep their natural forward sequence.

24. (a) The first term has the relationship with the second term of having an initial and final letter in forward alphabetic order and intervening letter in between from backward alphabetic order.
25. (e) The ratio of straight lines forming the letters is $1 : 2 :: 3 : 4$.
26. (d) The ratio of straight lines forming the letters is $2 : 3 :: 3 : 4$.
27. (d) The ratio of straight lines forming the letters is $2 : 2 :: 3 : 3$.
28. (c) In both the terms, two letters are skipped in between. Similar relationship exists in (c).
29. (e) Between first and second term, three letters are skipped - BC (DEF) GH. In answer choice (e) same relationship exists - ST (UVW) XY.
30. (e) Between first and second term, five letters are skipped - JK (LMNOP) QR. Same relationship exists in (e) - BC (DEFGH) IJ.

2.2 VERBAL SERIES COMPLETION

These questions have a form similar to the following example

Example: Each of the following series follow a regular rule/pattern. Write down the number or letter which will complete the sequence (series) and replace the question mark (?) :

1. 1 1 2 4 8 16 ?
2. B D F H ?
3. S V Y B ?
4. A Z C X E ?

Answers

1. 32 The figures double each time.
2. J Skip alternate letters in the alphabetical series.
3. E Every third letter alphabetically, returning to the beginning when reached.
4. V Alternate letters, forward from A and backwards from Z in the sequence.

To solve such questions, you are required to carefully study each and every question part of the series and try to establish the pattern which is followed in the given items. Once the pattern followed is established, write the correct answer, or, if choices are provided, select the correct one from the alternatives given.

We will now cover the most commonly found series and patterns.

LETTER SERIES

Letter series contain only letters of the alphabet.

Example : U B I P ?

Answer : W - If you carefully study the series, you will find that every seventh letter is taken and 'B' is taken. After E, I, J, K, L, M, N, O are omitted and 'P' is taken. Similarly, P, Q, R, S, T, U, V should be omitted and 'W' should be taken.

It may, at present, appear rather difficult. However, with some practice, you will find it easy. Here is a technique you will find useful.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

When you come across a group of questions of the 'letter series' type, quickly write down the alphabet and number the letters as above. A few examples will show you how this is helpful. Write the alphabet down on a piece of paper. Number it as shown above, draw the lines, and keep it in front of you.

Example

1. J L N P R T ?
2. C F I L O R ?
3. B F J N R V ?
4. E J O T Y D ?
5. D J P V B H ?
6. B I P W D K ?

Answers

1. V. Look at J, N, P, R and T on the numbered alphabet. Its easy to see the pattern is to skip one letter.
2. U. Look at C, F, I, L, O and R on the numbered alphabet. Its easy to see that the pattern is to skip two letters.
3. Z. Skip 3 letters.
4. I. Skip 4 letters.
5. N. Skip 5 letters.
6. R. Skip 6 letters.

In this example, letters are skipped in regular order; that is, the number of letters skipped remain the same.

Example

1. A C F J O ?
2. A D H M S ?
3. D F I M R ?

Answers

1. U. Look at letters A, C, F, J and O on the numbered alphabet. You will see the pattern : A (skip 1) C (skip 2) F (skip 3) J (skip 4) O. Therefore the next 'skip' should be 5 letters, bringing you to the answer, 'U'.

2. Z. The skipping pattern is 2, 3, 4, 5 and 6 letters.

3. X. The skipping pattern is 1, 2, 3, 4 and 5 letters.

In this example, letters are skipped in *increasing order*.

Example

1. A G L P S ?
2. B I O T X ?
3. C J P U Y ?

Answers

1. U. Use the numbered alphabet to find the pattern. A (skip 5) G (skip 4) L (skip 3) P (skip 2) S. Therefore the next 'skip' should be 1 letter, bringing you to answer 'U'.

2. A. The skipping order is 6, 5, 4, 3, 2 and 1 letters. Remember, after Z, A again follows. This is circular numbering of alphabet.

3. B. The skipping order is 6, 5, 4, 3, 2 letters and after Z, A is again repeated as in question 2 above.

In this example, letters are skipped in *decreasing order*.

Examples

1. A D F J M R ?

2. C G J O S Y ?

3. B D G J N R ?

4. A Z B Y C X D W ?

5. Z A Y B X C W D ?

Answers

1. V. Use the numbered alphabet and scribble down the number of letters skipped. e.g.

2 1 3 2 4

While writing down these numbers, you will realise that there are two interlinked series:

2 1 3 2 4 ?

2, 3, 4 and 1, 2, ?

3 completes the second series. Therefore, to get the answer skip 3 letters after R.

2. D. The two interlinked series are: 3 2 4 3 5 ?

3. W. The two interlinked series are: 1 2 2 3 3 ?

4. EV. One letter each from the beginning and one letter from end of the alphabet is taken.

5. VE. One letter each from end and one letter from the beginning of the alphabet is taken.

Examples

1. aa HI cc, cc JK ee, ee LM gg, _____

2. bb RS dd, ff TU hh, jj VW ll, _____

3. bb OP cc, dd QR ee, ff ST gg, _____

4. aBEf, bCFg, cDGh, _____

Answers

1. gg NO ii. Look at the small letters first. You will deduce that the small letters in the answer will be gg ____ ii. Look at the capital letters. You will deduce that the capital letters in the answer should be 'NO'

2. nn XY pp. After small letters 'll', the small letters will be nn ____ pp and after capital letters VW, letters XY will come. Small letters are arrived at by skipping one letter in between i.e., bb (c) dd, ff (g) hh and so on.

3. hh UV ii. The small letters are in consecutive order. bb — cc, dd — ee, ff — gg, hh — ii. The capital letters follow the natural sequence: OP - QR - ST - UV

4. dEHi. Find the letters on the numbered alphabet and pattern will be clear.

Examples

1. ABdEF, CDfGH, DEgHI, ____

2. AbCd, EfGh, IjKl, ____

3. ABzy, CDxw, EFvu, ____

4. ADbc, EHfg, ILjk, ____

Answers

1. EFhIJ. After AB, C is omitted and dEF follows. After CD, E is omitted fGH follows. After DE, F is omitted and gHI follows. Keeping the same analogy, EF should follow and 'g' should be omitted and hIJ should follow.

2. MnOp. The pattern is clearly alphabetic order with alternating capital and small letters.

3. GHts. Examine the capital letter. The pattern requires the capital letters of the answer to be 'GH'. Examine the small letter. A quick look at the numbered alphabet, and you will see that the small letters are in reverse alphabetical order. Hence the small letters of the answer will be 'ts'.

4. MPno. Use the numbered alphabet and you will get the appropriate answer.

Now that you have covered the various types of letter series, attempt the following test and write down your answers. Compare them with the answers given after the test. Study the explanation given with each answer. Even if you got the correct answer, a study of the explanations will bring out the *correct way* of arriving at the answer.

PRACTICE TESTS - LETTER SERIES

DIRECTIONS: Supply the right letters for question (?) marks in the following questions:-

1. A C F J O ?

(a) P

(c) U

(e) L

(b) Q

(d) V

2. A D E H I L ??

(a) MP

(c) MO

(e) NM

(b) MN

(d) MQ

3. A Z B Y C X D ?

- (a) E
- (c) R
- (e) P

- (b) W
- (d) E

4. C D H I M N ? ?

- (a) Q S
- (c) O P
- (e) S T

- (b) R S
- (d) P Q

5. A U B Y C Z ? ?

- (a) B C
- (c) M N
- (e) D X

- (b) K L
- (d) P N

6. A G L P S ?

- (a) X
- (c) W
- (e) Z

- (b) Y
- (d) U

7. R U X A D ?

- (a) E
- (c) G
- (e) H

- (b) F
- (d) I

8. C F I L O ?

- (a) P
- (c) R
- (e) R

- (b) Q
- (d) S

9. E G J L O Q ?

- (a) S
- (c) U
- (e) T

- (b) R
- (d) V

10. A I P V A E ?

- (a) F
- (c) H
- (e) E

- (b) G
- (d) I

11. I M Q U Y C ?

- (a) C
- (c) F
- (e) E

- (b) D
- (d) G

12. C E I K O Q ?

- (a) R
- (c) T
- (e) V

- (b) S
- (d) U

13. ZXVTRP?

(a) Q

(c) S

(c) N

(b) R

(d) M

14. XUSPNK?

(a) I

(c) M

(c) Y

(b) L

(d) Q

15. TQNKH?

(a) I

(c) S

(c) F

(b) J

(d) E

16. DILQTYBG?

(a) H

(c) O

(c) J

(b) I

(d) P

17. XUSPNKI?

(a) J

(c) M

(c) O

(b) K

(d) F

18. DFIMR?

(a) S

(c) M

(c) Z

(b) U

(d) X

19. BDGILN?

(a) O

(c) S

(c) Q

(b) Q

(d) U

20. DILQTYBG?

(a) H

(c) R

(c) Q

(b) J

(d) I

21. JEZUPK?

(a) F

(c) O

(c) B

(b) M

(d) P

22. HVGTFR EP DN ??

(a) KL

(c) MN

(c) CL

(b) LM

(d) NO

23. UBIPW?

- | | |
|-------|-------|
| (a) V | (b) F |
| (c) X | (d) M |
| (e) D | |

24. TSQNJ?

- | | |
|-------|-------|
| (a) S | (b) E |
| (c) K | (d) L |
| (e) N | |

25. SPLG?

- | | |
|-------|-------|
| (a) R | (b) S |
| (c) U | (d) A |
| (e) V | |

26. BEINT?

- | | |
|-------|-------|
| (a) R | (b) S |
| (c) U | (d) A |
| (e) V | |

27. BFKQ?

- | | |
|-------|-------|
| (a) R | (b) S |
| (c) W | (d) X |
| (e) C | |

28. RTPRNP?

- | | |
|-------|-------|
| (a) Q | (b) L |
| (c) S | (d) F |
| (e) K | |

29. WTPMIFB?

- | | |
|-------|-------|
| (a) W | (b) P |
| (c) F | (d) Y |
| (e) V | |

30. XWVUTS?

- | | |
|-------|-------|
| (a) R | (b) T |
| (c) E | (d) X |
| (e) P | |

31. ADEHIL _____ QTUX.

- | | |
|--------|--------|
| (a) AY | (b) VB |
| (c) CW | (d) DX |
| (e) MP | |

32. AYBZCW _____

- | | |
|--------|--------|
| (a) EF | (b) GH |
| (c) MN | (d) IK |
| (e) DX | |

33. BC FG JK _____ RS VW

(a) LM

(b) OP

(c) QR

(d) NO

(e) ST

34. CD GH KL OP ST _____

(a) RS

(b) QR

(c) GH

(d) WX

(e) RN

35. XD WC _____ YA

(a) XY

(b) CD

(c) OP

(d) WV

(e) ZB

36. AI BJ CK _____

(a) LM

(b) GH

(c) QR

(d) SE

(e) DL

37. AM BN EI FJ CO DP GK _____

(a) PQ

(b) QR

(c) OT

(d) HL

(e) HG

38. A C B E C G D ? ?

(a) MN

(b) LM

(c) IE

(d) GH

(e) XY

39. Z W S P L I E ?

(a) D

(b) F

(c) G

(d) B

(e) K

40. A E J P T ?

(a) U

(b) Y

(c) R

(d) W

(e) X

41. A C E G B D F H I K _____

(a) LM

(b) OP

(c) IJ

(d) JL

(e) JK

42. C G K O S

A E I M O

E I M Q ?

(a) W

(b) X

- (c) V
(e) M
43. ABC abc DEF ____
(a) ghi
(c) ABC
(e) DEF
44. ACF acf G ??
(a) IL gil
(c) IL gjl
(e) EF ghi
45. ZXV z xv U
(a) ust UST
(c) USQO
(e) us OP
46. accce-ACCCE ??? ???
(a) GJJJK gijjk
(c) GIIIK ghhk
(e) giiik GHHK
47. AGMS agms ??? ???
(a) ABCD abcd
(c) BHNT bhnt
48. aa bbb cccc ????
(a) ddjjj
(c) dddeee
(e) DDDDD
49. aB bB cD dD ?
(a) e
(c) g
50. m NN o PP q ??
(a) rR
(c) RR
(e) sT
- (d) U
(b) GHI
(d) def
(b) JL gil
(d) LL gli
(b) SQ usq
(d) USTrs
(b) giiik GIIIK
(d) GIIIK Giiik
(b) abcd ABCD
(d) bhnt BHNT
(b) dddjjj
(d) dddddd
(b) f
(d) G
(b) qR
(d) rr

Answers and Explanation

1.(c) Letters following alphabetic order and letter in between skipped in ascending order, increasing each time:

A (B) C (DE) F (GHI) J (KLMN) O (PQRST) U
1 2 3 4 5

2. (a) Alphabets are grouped in rows of 4 (ABCD, EFGH,) and an initial and final letter of the row in horizontal position is taken.

3. (b) Letter sets are formed by taking a letter from forward order (A-Z) and one letter from backward order (Z-A).

4. (b) After a set of 2 consecutive letters, 3 letters are skipped __

CD (EFG) HI (JKL) MN (OPQ) RS
3 3 3

5. (e) Alphabet blocked into a 4-letter row (4 horizontally in the row) and 6 (vertically in the row, except row 2 and 3 which have 7 letters). Vertically A row ends in U, B row ends in Y, C row ends in Z and obviously the last row starting from D will end in X.

6. (d) Letters follow alphabetic order. Skipping is done in decreasing order:

A (BCDEF) G (HIJK) L (MNO) P (QR) S (T) U

5 4 3 2 1

7. (c) Two intervening letters are skipped in alphabetic order : R (ST) U (VW) X (YZ) A (BC) D (EF) G

As explained earlier, circular continuity is maintained i.e. after Z again A B C D order follow.

8. (c) 2 consecutive letters are skipped after each letter.

9. (c) First 1 letter and 2 letters skipped alternatively.

10. (c) Letters maintain alphabetic order and number of letters skipped decrease by one each time. First 7 letters are skipped then 6, 5, 4, 3, and so on.

11. (d) 3 letters are skipped.

12. (d) In alphabetic order, letter skipped in the order of 1 and 3 alternatively.

C (D) E (FGH) I (J) K (LMN) O (P) Q (RST) U.

13. (c) Backward order of letter is taken, skipping one letter alternatively - Z (Y) X (W) V (U) T (S) R (Q) P (O) N.

14. (a) Backward order is taken. First 2 letters and 1 letter are skipped alternatively - X (WV) U (T) S (RQ) P (O) N (ML) K (J) I.

15. (d) Backward order is followed skipping 2 letters alternatively. T (SR) Q (PO) N (ML) K (JI) H (GF) E.

16. (e) After D, 4 letters are skipped and I follows after which 2 letters are skipped. Trend flows alternatively :

D (EFGH) I (JK) L (MNOP) Q (RS) T (UVWX) Y (ZA) B (CDEF) G (HI) J.

17. (d) Before X, 2 letters are skipped and U follows, after which 1 letter is skipped and S follows. In this manner after every letter 2 and 1 letter alternatively are skipped.

18. (d) Letters are skipped in the order as 1, 2, 3, 4, 5

D (E) F (GH) I (JKL) M (NOPQ) R (STUVW)

1 2 3 4 5

19. (b) Letters skipping 1 and 2 alternatively.

B (C) D (EF) G (H) I (JK) L (M) N (OP) Q

20. (b) First 4 and 2 letters are skipped alternatively.

D (EFGH) I (JK) L (MNOP) Q (RS) T (UVWX) Y (ZA) B (CDEF) G (HI) J

21. (a) Every 5th letter backward from J.

22. (c) 2 alternating series, one going backwards from H and the other every 2nd letter forwards from V.

23. (c) Every 7th letter alphabetically.

24. (b) Backwards the interval increases by one each time.

TS (R) Q (PO) N (MLK) J (IHGF) E

25. (d) The letters go back by 2, 3, 4, 5 and 6 in that order.

S (RQ) P (ONM) L (KJIH) G (FEDCB)

2 3 4 5

26. (d) Letters to be skipped at the rate of 2, 3, 4, 5, 6

B (CD) E (FGH) I (JKLM) N (OPQRS) T (UVWXYZ) A

2 3 4 5 6

Circular continuation follows: After Z again A starts.

27. (d) Letters go up by 3, 4, 5, 6

B (CDE) F (GHIJ) K (LMNOP) Q (RSTUVW) X

3 4 5 6

28. (b) Move 2 letters forward and 4 letters backwards alternately.

29. (d) Skip 2 and 3 steps back in alphabetic order alternately:

W (VU) T (SRQ) P (ON) M (LKJ) I (HG) F (EDC) B (AZ) Y

30. (a) Letters are in alphabetic order from backward.

31. (e) Alphabet arranged in a block of 4 letter-rows A-D, E-H, I-L, M-P, Q-T, U-X and YZ. The series comprises of initial and final letter of horizontal rows arranged as above.

32. (e) Initial and final letters of vertical rows are taken as 4 letter rows of alphabets as made for Q. 31.

33. (d) Medial pair of letters are taken from the 4-letter block.

34. (d) Last pair of letters are taken from the 4-letter block.

35. (e) Initial and last letter taken from downwards to upwards in the 4-letter block.

36. (e) Vertically 1st and 3rd letter of the row is taken, skipping one in between.

37. (d) Vertically 1st and 4th letter of the row are taken skipping two letters in between.

To fully understand the basis of these questions, make the 4-letter block of the alphabet as follows and the answers will be quite clear without any explanation:

A B C D

E F G H

I J K L

M N O P

Q R S T

U V W X

Y Z - -

38. (c) There are 2 alternate series, one from A and other from alternate letter C.

39. (d) Skip 2 and 3 steps backwards in the alphabetic order alternately.

40. (b) From A to J there are 10 letters (both inclusive) 3 of which are written in the question and between A to J seven letters are skipped. Based on this between P to (?) there should be 10 letters, out of which 2 are written (P & T) skipping only 7 letters. Hence counting from P to (?), based on A-J pattern, 8 letters are missing and, therefore, after P, Y should come to complete the pattern in series.

41. (d) This question is based on the 4-letter row. In the series first AC is taken (skipping B) and BD. In the same manner EG and FH are taken and so on.

42. (d) In the first row between C and S three letters each are skipped. C(DEF) G(HIJ) K(LMN) O(PQR) S.

Same pattern is followed in other rows.

43. (d) 44 (a) 45. (b) 46. (b) 47. (c) 48. (d) 49. (a) 50. (c)

For questions 43 to 50, no detailed explanation is required. A careful observation of capital and small letters will give correct answers.

Number Series

In these tests, the series consists of numbers (digits). Number series are generally formed by :

A. Addition of figures given in the row.

B. Subtraction of figures from one another.

C. Division of figures by one another.

D. Multiplication of figures.

E. Logical transposition of figures.

F. Increase/decrease of numbers in a specific pattern.

A careful examination of the example given here will familiarise you with the type of questions that you are likely to face :

Example : Each of the following series follows a regular pattern. Write down the number which will complete the sequence and replace the question mark (?).

1. 5 10 15 25 40 ?

2. 3 12 48 192 ?

3. 48 24 72 36 108 ?

4. 1 3 7 15 31 ?

5. 285 253 221 189 ?

6. 1 2 8 9 15 16 ?

7. 9 4 8 5 7 6 ?

8. 905 576 329 247 ?

Answers

1. 65. Each term is the addition of the two previous numbers.

2. 768. Multiply each term by 4 to get the next number.

3. 54. Divide by 2 and multiply by 3 alternately.

4. 63. Numbers increase in steps of 2, 4, 8 and 16.

5. 157. Numbers decrease by 32 each time.

6. 22. The interval is alternately 1 and 6.

7. 6 and 7. Two alternating series, one increasing and the other decreasing.

8. 82. The interval between each pair of numbers becomes the succeeding term in the series.

Now attempt the following test and write down your answers. Compare them to the answers given and study the explanations.

PRACTICE TESTS - NUMBER SERIES

DIRECTIONS : Figure given in each question follows a set pattern. Determine the pattern and find the correct answer :-

1. 9 15 23 33 ?

(a) 44

(b) 36

(c) 38

(d) 45

2. 12 8 14 6 16 ?

(a) 18

(b) 32

(c) 5

(d) 4

3. 9 6 16 10 30 18 ? 34

(a) 36

(b) 60

(c) 58

(d) 60

4. 68 81 96 ? 132

(a) 105

(b) 110

(c) 130

(d) 113

5. 2 5 9 ? 20 27

(a) 48

(b) 12

(c) 14

(d) 24

6. 30 23 17 12 ? 5

(a) 6

(b) 7

(c) 8

(d) 9

7. 10 18 34 ?? 130 258

(a) 32

(b) 60

(c) 68

(d) 66

8. 18 10 6 4 3 ?
(a) 8 (b) 4
(c) 3.5 (d) 2.5
9. 6 11 18 27 38 ?? 66
(a) 58 (b) 57
(c) 51 (d) 59
10. 1 8 27 ?
(a) 37 (b) 47
(c) 57 (d) 64
11. 4 10 22 46 ??
(a) 56 (b) 66
(c) 76 (d) 94
12. 4 5 7 ? 19
(a) 56 (b) 66
(c) 17 (d) 11
13. 5 8 12 17 23 ? 38
(a) 26 (b) 28
(c) 30 (d) 29
14. 5 9 16 29 54 103 ?
(a) 102 (b) 94
(c) 103 (d) 200
15. 4 9 20 43 90 ??
(a) 180 (b) 182
(c) 179 (d) 185
16. 6 12 21 33 ?
(a) 38 (b) 40
(c) 45 (d) 48
17. 15 20 30 ?
(a) 35 (b) 40
(c) 45 (d) 50
18. 18 30 48 72 96 ?
(a) 106 (b) 115
(c) 120 (d) 96
19. 3 8 22 63 185 ?
(a) 285 (b) 295
(c) 310 (d) 500
20. 12 32 72 152 ? 632
(a) 515 (b) 613
(c) 815 (d) 312

Answers and Explanations

1. (d) The series increases by 6, then 8, 10 and finally 12.
2. (d) Two alternating series increasing in twos from 12 and reducing in twos from 8.
3. (c) Two alternate series, in each of which figures are doubled and result reduced by 2 to form the next number of the series.
4. (d) Series increases by steps 13, 15, 17 19.
5. (c) Interval increases by 1 each time.
6. (c) Interval reduces by 1 each time.
7. (d) Double each figure and subtract 2 each time.
8. (d) Each figure is obtained by adding 2 to the previous one and then dividing by 2.
9. (c) Square numbers 2,3,4,5 respectively adding 2 each time.
10. (c) Cube numbers 1,2,3,4 respectively.
11. (d) Each number is twice the previous one plus 2.
12. (d) Each number is twice the previous one and minus 3.
13. (c) Starting from first figure, increase each time by 3,4,5 and so on.
14. (d) Multiply each number by 2 and reduce 1,2,3,4 and so on from each figure. e.g. $5 \times 2 = 10$, then $10 - 1 = 9$.
15. (d) Double each figure and add 1,2,3,4 and so on. e.g. $4 \text{ doubled} = 8 + 1 = 9$, then $9 \text{ doubled} = 18 + 2 = 20$ and so on.
16. (d) Numbers increase @ 6, 9, 12, 15 and so on.
17. (d) Number increasing in order of 5, 10, 20, 30 and so on.
18. (d) The scheme is

$18 \times 2 = 36 - 6 = 30$
$30 \times 2 = 60 - 12 = 48$
$48 \times 2 = 96 - 24 = 72$ and so on.
19. (d) The scheme is:

$3 \times 3 = 9 - 1 = 8$
$8 \times 3 = 24 - 2 = 22$
$22 \times 3 = 66 - 3 = 63$ and so on.
20. (d) The scheme is:

$12 + 4 = 16 \times 2 = 32$
$32 + 4 = 36 \times 2 = 72$
$72 + 4 = 76 \times 2 = 152$ and so on.

2.3 Verbal Classification (odd Man Out)

These question test your ability to observe differences and similarities among various objects. Verbal Classification tests also known as 'odd Man Out' tests, consist of a list of 5-6 items. These items could be either words, group of letters, or figures (digits). Out of the given 5-6 items, one of them is different from the others. In other words, except one, all of them have some sort of similarity. You are required to study the given list of items, determine the similarity between them and pick out the one which does not bear the same characteristics as the others in the list. This different, unassociated or odd item has to be picked out from the list of items given in the question.

Example : In the following five words, one is different from the others,

- | | |
|---------------|------------|
| (a) Rode | (b) Flew |
| (c) Sailed | (d) Walked |
| (e) Travelled | |

Answer (e). If we study these five words we find that all of them are associated with 'movement' or 'travelling' of a person. They all seem to be inter-related. However, a careful analysis will reveal that the word (e) TRAVELLED is different from all the others. The words (a) to (d) are specific ways of travelling and as such

the word (e) TRAVELLED does not fit in the list. It is the *odd* word in this list of 5 words. This type of word or 'items' analysis is called 'Classification' or finding the 'odd-one out'.

FINDING THE ODD WORD

These questions are like the above example. There are several basic relationships that could exist between the words. As in the case of word analogy (section 2.1.2) questions, the first step is to identify the relationship. It would be useful if you quickly review section 2.1.2 before going ahead. Several types of relationships have been identified and covered below. You do not need to remember the names of these types. You must understand the relationship and be able to solve the few exercises given with each type.

Relationship based on meaning

- | | |
|-----------------------|--------------|
| Example (a) Different | (b) Separate |
| (c) Distinct | (d) Similar |
| (e) Distinguishable | |

Answer: (d). All the other words are synonyms.

Exercises

- (a) Arouse (b) Waken (c) Stir (d) Incite (e) Depress
- (a) Ascertain (b) Learn (c) Discover (d) Ignorant (e) Determine
- (a) Applaud (b) Cheer (c) Extol (d) Hiss (e) Praise
- (a) Cripple (b) Lamé (c) Disable (d) Weaken (e) Help

Answers 1.(e) 2.(d) 3.(d) 4.(e)

Inter-relationship of words

Example

- (a) Mars (b) Mercury (c) Jupiter (d) Challenger (e) Neptune

Answer: (d). All others are planets and Challenger is space vehicle.

Exercises

- (a) Eyes (b) Nose (c) Ears (d) Hands (e) Oats
- (a) Heart (b) Liver (c) Spleen (d) Kidneys (e) Nose
- (a) Paper (b) Note Book (c) Writing Pad (d) Cash Book (e) Cl
- (a) Chalk (b) Pen (c) Pencil (d) Black Board (e) Ball-point pen

Answers: 1.(e) 2.(e) 3.(e) 4.(d)

Words consistency relationship

Example

- (a) Force (b) Course (c) Horse (d) Black (e) Where

Answer: (b). All words consist of 5 letters, except (b).

Exercises

1. (a) Bore (b) Core (c) More (d) Tore (e) Bare
2. (a) Taken (b) Murder (c) Bless (d) Beset (e) Boast
3. (a) Author (b) Course (c) Other (d) Answer (e) Simple
4. (a) Letter (b) Begger (c) Hotter (d) Beseech (e) Benign
5. (a) Depress (b) Install (c) Occur (d) Bluff (e) Blast
6. (a) Topper (b) Hopper (c) Bigger (d) Latter (e) Belief
7. (a) In (b) On (c) At (d) No (e) Up
8. (a) Eating (b) Oats (c) Aerial (d) Airy (e) Teach

Answers: 1.(e) 2.(b) 3.(c) 4.(e) 5.(e) 6.(c) 7.(d) 8.(e)

Explanations

1. Except (e) all have -ORE in common.
2. Except (b) all words consist of 5 letters.
3. Except (c) all words consist of 6 letters.
4. Except (c) all words have double letter in the middle.
5. Except (e) all words have double letter.
6. Except (c) all words have double letter in the middle.
7. Except (d) all start with a vowel.
8. Except (e) all have two vowels in the beginning.

In addition to the above, the various relationships that could exist between words have been discussed in detail in the previous section.

Now attempt the test in the following pages and write down your answers. Compare them with the answers given after the test and study the explanations.

PRACTICE TEST FIND THE ODD WORD

DIRECTIONS: In each of the following questions, there are five choices (a-e). Four of them are alike and one different. Find the odd-man out.

1. (a) Father (b) Mother
(c) Sister ~~(d) Mother-in-law~~
(e) Brother
2. (a) Sunday (b) Monday
~~(c) Holiday~~ (d) Friday
(e) Saturday
3. (a) Truthful (b) Sly
~~(c) Virtuous~~ ~~(d) Pensive~~ → ~~عاجز~~
(e) Cowardly
4. (a) Cricket ~~(b) Chess~~
(c) Hockey (d) Football
(e) Volleyball
5. (a) Chair (b) Sofaset
~~(c) Carpet~~ (d) Bench
(e) Stool
6. (a) Furnace oil (b) Mobil oil
~~(c) Petrol~~ (d) Diesel oil
~~(e) Kerosene oil~~
7. (a) Tiger ~~(b) Leopard~~
(c) Wildcat (d) Fox
(e) Cougar
8. ~~(a) Flew~~ (b) Sailed
~~(c) Travelled~~ (d) Rode
(e) Walked
9. (a) Wife (b) Male
(c) Female ~~(d) Husband~~
~~(e) She~~
10. (a) Explain ~~(b) Instruct~~
(c) Teach (d) Train
(e) Educate
11. (a) Letter (b) Box
(c) Book (d) Pot
~~(e) Orange~~
12. (a) Boy (b) Cow
(c) Bow (d) Due
~~(e) Out~~
(a) Time (b) Room

Exercises

1. (a) Bore (b) Core (c) More (d) Tore (e) Bare
2. (a) Taken (b) Murder (c) Bless (d) Beset (e) Boast
3. (a) Author (b) Course (c) Other (d) Answer (e) Simple
4. (a) Letter (b) Begger (c) Hotter (d) Beseech (e) Benign
5. (a) Depress (b) Install (c) Occur (d) Bluff (e) Blast
6. (a) Topper (b) Hopper (c) Bigger (d) Latter (e) Belief
7. (a) In (b) On (c) At (d) No (e) Up
8. (a) Eating (b) Oats (c) Aerial (d) Airy (e) Teach

Answers: 1.(e) 2.(b) 3.(c) 4.(e) 5.(e) 6.(c) 7.(d) 8.(c)

Explanations

1. Except (e) all have -ORE in common.
2. Except (b) all words consist of 5 letters.
3. Except (c) all words consist of 6 letters.
4. Except (e) all words have double letter in the middle.
5. Except (e) all words have double letter.
6. Except (c) all words have double letter in the middle.
7. Except (d) all start with a vowel.
8. Except (e) all have two vowels in the beginning.

In addition to the above, the various relationships that could exist between words have been discussed in detail in the previous section.

Now attempt the test in the following pages and write down your answers. Compare them with the answers given after the test and study the explanations.

PRACTICE TEST FIND THE ODD WORD

DIRECTIONS : In each of the following questions, there are five choices (a-e). Four of them are alike and one different. Find the odd-man out.

1. (a) Father (b) Mother
(c) Sister ~~(d) Mother-in-law~~
(e) Brother
2. (a) Sunday (b) Monday
~~(c) Holiday~~ (d) Friday
(e) Saturday
3. (a) Truthful (b) Sly
(c) Virtuous ~~(d) Pensive~~ → St 20/05
(e) Cowardly
4. (a) Cricket ~~(b) Chess~~
(c) Hockey (d) Football
(e) Volleyball
5. (a) Chair (b) Sofaset
~~(c) Carpet~~ (d) Bench
(e) Stool
6. (a) Furnace oil (b) Mobil oil
~~(c) Petrol~~ (d) Diesel oil
~~(e) Kerosene oil~~
7. (a) Tiger ~~(b) Leopard~~
(c) Wildcat (d) Fox
(e) Cougar
8. ~~(a) Flew~~ (b) Sailed
~~(c) Travelled~~ (d) Rode
(e) Walked
9. (a) Wife (b) Male *N*
(c) Female ~~(d) Husband~~
~~(e) She~~
10. (a) Explain ~~(b) Instruct~~
(c) Teach (d) Train
(e) Educate
11. (a) Letter (b) Box
(c) Book (d) Pot
~~(e) Orange~~
12. (a) Boy (b) Cow
(c) Bow (d) Due
~~(e) Out~~
13. (a) Time (b) Room

- | | | |
|------------|---|---|
| | (c) Person | (d) Reason |
| | (e) Object | |
| 14. | (a) Three-wheeler | (b) Taxi |
| | (c) Bus | <input checked="" type="checkbox"/> (d) Tanker |
| | (e) Car | |
| 15. | (a) Violet | (b) Green |
| | (c) Red | (d) Blue |
| | <input checked="" type="checkbox"/> (e) Gold | |
| 16. | (a) Handle | (b) Chain |
| | (e) Chain-cover | (d) Spokes |
| | <input checked="" type="checkbox"/> (e) Cycle | |
| 17. | (a) Iron | (b) Silver |
| | (e) Zinc | (d) Copper |
| | <input checked="" type="checkbox"/> (e) Brass — <i>copy</i> | |
| <u>18.</u> | (a) Ohm | <input checked="" type="checkbox"/> (b) Pascal |
| | (c) Volt | (d) Watt |
| | <input checked="" type="checkbox"/> (e) Metre | |
| 19. | (a) Lead | (b) Mercury <i>All are pure metals</i> |
| | (e) Antimony | (d) Chromium |
| | <input checked="" type="checkbox"/> (e) Cast Iron | |
| 20. | (a) Sign of Plus | (b) Sign of Minus |
| | (e) Sign of multiplication | (d) Sign of equal to |
| | <input checked="" type="checkbox"/> (e) Sign of therefore | |
| <u>21.</u> | (a) Oxygen | (b) Hydrogen |
| | (e) Carbondi-oxide | <input checked="" type="checkbox"/> (d) Hydrogen peroxide |
| | (c) Nitrogen | |
| <u>22.</u> | <input checked="" type="checkbox"/> (a) Water | (b) Sulphuric Acid |
| | (e) Nitric Acid | (d) Hydrochloric Acid |
| | <input checked="" type="checkbox"/> (e) Mercury | |
| 23. | <input checked="" type="checkbox"/> (a) Moon | (b) Saturn |
| | (e) Venus | (d) Earth |
| | (c) Mereury | |
| 24. | (a) September | (b) November |
| | (e) October | (d) December |
| | <input checked="" type="checkbox"/> (e) January | |
| 25. | (a) Africa | (b) Australia |
| | (c) Asia | (d) Europe |
| | <input checked="" type="checkbox"/> (e) Sri Lanka | |
| 26. | (a) Inch | (b) Foot |
| | (c) Yard | (d) Meter |
| | <input checked="" type="checkbox"/> (e) Quart | |

27. ☒ (a) Litres (b) Grams
(c) Kilograms (d) Tonnes
(e) Quintal
28. ☒ (a) Square inch (b) Square foot
(c) Square yard ☒ (d) Mile
(e) Area
29. (a) Cubic metres (b) Cubic centimeter
(c) Litres (d) Gallons
☒ (e) Square meters
30. (a) Thunder (b) Clouds
(c) Rain (d) Lighting
☒ (e) Rice
31. (a) Coal (b) Furnace oil
☒ (c) Mustard oil (d) Petrol
(e) Cowdung
32. (a) Quality (b) Quantity
(c) Qualify ☒ (d) Educated *All*
☒ (e) Beauty
33. (a) Teacher (b) Chear
☒ (c) Greater (d) Cheater *All*
☒ (e) Creator *g*
34. (a) Igloo (b) Kothi
(c) Bungalow (d) Flat
☒ (e) Showroom
35. (a) Fountain Pen (b) Lead Pencil
(c) Typewriter (d) Ball point pen
☒ (e) Note book
36. (a) Sit (b) Hit
☒ (c) Kit (d) Fit *Others as*
☒ (e) Knit *Kit*
37. ☒ (a) Sanskrit *Devanagari* (b) Ashu Lipi *Other*
(c) Sanket Lipi
(e) Pitamnscrip
(d) Shorthand
38. (a) Zeal (b) Seal
☒ (c) Kneal (d) Meal
(e) Deal
39. (a) U.P. (b) H.P.
(c) M.P. (d) A.P.
☒ (e) Chandigarh
40. ☒ (a) April ☒ (b) May

- (c) February (d) July *Pl. enc*
- (e) January
41. (a) September (b) October
- (c) November (d) December
- (e) July
42. (a) Keyboard (b) Roller
- (c) Tab set (d) Typeface
- (e) Typewriter
43. (a) Iron (b) Copper
- (c) Silver (d) Zinc
- (e) Mercury
44. (a) Fixed (b) Times
- (c) Males (d) Homes
- (e) Roof
45. (a) Colours (b) Green
- (c) Orange (d) Blue black
- (e) Pink

Key and Explanation

- 1.(d) Remaining forms part of a normal nuclear family.
- 2.(c) Others are name of days of a week.
- 3.(d) This refers to mood. Others refer to character traits.
- 4.(b) Is an indoor game.
- 5.(c) Is a floor spread. Others are objects to sit on.
- 6.(b) Others are fuels.
- 7.(b) Others are cat family.
- 8.(c) Others are specific ways of travelling.
- 9.(d) All end in vowel 'E'.
- 10.(a) Except this all imply presence of students.
- 11.(e) All words end in consonant but (e) ends in vowels.
- 12.(e) Diphthongs (3 vowels together) start the words in this case. Other words end in Diphthongs.
- 13.(b) All are answers to questions: Who, What, When, Where except 'room' which is non-generic.
- 14.(d) Others are to carry passengers. Tanker carries liquids.
- 15.(e) Others are name of colours. Note: The word here is 'gold' and not 'Golden'.
- 16.(c) Others are part of a cycle.
- 17.(e) All are metals. Brass is an alloy.
- 18.(e) Others are units to measure abstract items. Other units measure invisible items.
- 19.(e) All are pure metals.
- 20.(e) In other signs lines are used.
- 21.(d) Gas in liquid form. Others are vapour.
- 22.(e) All liquids make the surface wet, except mercury.
- 23.(a) Moon is a satellite. Others are planets.
- 24.(e) Other names of months ending in 'ber'
- 25.(e) Others are continents. (e) is a country.
- 26.(e) Unit to measure liquids. Others are length measurements.
- 27.(a) Measures volumes, others measure weight.
- 28.(d) Others measure area.
- 29.(e) Other measures volume.

- 30.(e) Others are rain related phenomenon.
 31.(e) Others are fuel.
 32.(d) All have 3 vowels, except (d) which has 4.
 33.(e) All words can be formed from letters of the word TEACHER
 34.(e) Others are dwelling places.
 35.(e) Others are equipment for writing.
 36.(e) Kit is a noun. Others are verb.
 37.(a) Others are script. (a) is a language.
 38.(c) Word having 5 letters.
 39.(e) Others are states.
 40.(a) The month having 'Y'.
 41.(e) Others end in 'ber'.
 42.(e) Others are part of a typewriter. Part-Part and Whole relationship.
 43.(e) Metal in liquid form.
 44.(e) All words consist of: Consonant-Vowel-consonant-vowel-consonant. (e) has two vowels in the middle and one each consonant in the beginning and end.
 45.(a) Others are name of colours.

FINDING THE ODD LETTER GROUP

Example

(a) aBC (b) BaC (c) abC (d) BCa (e) CBa

Answer: (c). This item has two small letters. All other items have only one 'small' letter.

There are various relationships which can exist between the items. Several types of relationships have been identified and covered below. You do not need to remember the names of these types. You must understand the relationship and be able to solve the few exercises given with each type.

Relationship based on position of letters

Example

(a) AD (b) BE (c) CF (d) DG (e) EF

Answer: (e) In each pair, two immediately following letters have been skipped, i.e. A (BC) D. This relationship is in all pairs, except (e) in which there is no skipping at all.

Exercises

	(a)	(b)	(c)	(d)	(e)
1.	BD	CE	DF	EG	FG
2.	AZ	BY	CX	DU	EV
3.	ZW	YV	XV	WT	VS
4.	AN	BO	CP	DQ	ES

Answers 1.(e) 2.(d) 3.(c) 4.(e)

Explanation

1. Every 2nd letter is taken to make the pairs. In (e) this relationship does not exist.

2. Each pair consists of one letter from the beginning and one letter from the end, except in (d).

3. Every 3rd letter is taken from the end of the alphabet counting from Z to A.

4. Each pair contains one letter from the beginning and one from the middle, i.e. 12 letters are skipped in between the letters. A (skip 12 letters) N, and so on.

Small and Capital letter relationship

Example

(a) ABe (b) BCd (c) CDe (d) DEF (e) Efh

Answer: (e). Each pair contains two capital letters and one small letter and natural alphabetic sequence is followed. In (e) there is only one capital letter and between 'f' and 'h' alphabetic sequence is not followed as letter 'g' has been skipped.

Exercises

	(a)	(b)	(c)	(d)	(e)
1.	Acc	FgH	KIn	Oqs	Tvx
2.	AcDe	FgHi	KIMn	Oprs	TvWx
3.	FHgi	KMIn	OQpr	TVuw	ACdE
4.	OpRs	TuWx	FgHi	AbDe	LNOp

Answers 1.(b) 2.(d) 3.(e) 4.(c)

Vowel-consonant relationship

Example (a) AbcdE (b) IfghO (c) ApqrL (d) UlmnE (e) EwxyO

Answer: (c) Each group of letters consists of 2 vowels, one each in the beginning and end. In between 2 vowels, three letters in alphabetic sequence are given. In (c), there is only one vowel.

Exercises

	(a)	(b)	(c)	(d)	(e)
1.	bacd	figh	lomn	puqr	qrst
2.	Fagh	Kelm	Piqr	Bocd	Jclm
3.	Bcda	Fghe	Klmi	Pqro	Vwxy
4.	aKLMi	oFGHe	iPQRi	cBCDv	oJKLU

Answers: 1.(e) 2.(c) 3.(e) 4.(d)

Note: Remember five vowels 'AEIOU' and their alphabetic sequence. Pairs can be made by combinations of vowels and consonants.

Repetition and skipping relationship

Example

(a) aab acc (b) bbe cff (c) ffg ijj (d) kkl noo (e) trr ggh

Answer: (e). In each group, the initial and final letters are repeated and an intervening letter is omitted. Note following explanation:
aab (c) dee

bbc (d) eff

ffg (h) ijj

kkl (m) noo

Letters in brackets are the one skipped.

Exercises

- | | | | | |
|-----------|--------|--------|--------|--------|
| 1. cdffg | abdde | lmoop | grtuu | oprss |
| 2. abzz | cdyy | efxx | ghvv | ijvw |
| 3. Rsttww | Klmmpp | Fghhkk | Bcddgg | Abccdd |
| 4. tvxzz | acegg | ghijj | kmoqq | oqsuu |

Answers: 1.(d) 2.(d) 3.(e) 4.(c)**Letter Form relationship***Example* (a) T (b) H (c) K (d) E (e) S*Answer:* (c). All letters are formed by straight lines except S which is a curved letter.*Exercises*

- | | | | | |
|----------|-------|-------|-------|-------|
| 1. (a) p | (b) q | (c) g | (d) j | (e) h |
| 2. (a) Z | (b) N | (c) H | (d) F | (e) M |
| 3. (a) C | (b) G | (c) Q | (d) V | (e) S |
| 4. (a) F | (b) A | (c) N | (d) Z | (e) X |

Answers: 1.(e) 2.(e) 3.(d) 4.(e)*Explanation*

1. All letters are having a tail downward. In (e) the tail is upward.
2. All letters are made up of 3 lines. Letter M is made up of 4 lines.
3. All are curved letters, except V which is formed by straight lines.
4. All letters are made up of 3 lines. Letter X is made up of two lines.

Now attempt the following test and compare your answers with the ones given after the test. Study the explanations.

PRACTICE TESTS - FINDING THE ODD LETTER GROUP

DIRECTIONS : Here are five group of letters marked (a-e). Four of them are alike in some way or the other, while one is different (odd). Tick mark the one which is different from others:-

- | (a) | (b) | (c) | (d) | (e) |
|----------------|-------------|-------------|-------------|-------------|
| 1. aB EF ij | bC FG jk | pQ TU yz | tU XY bc | gH KL op |
| 2. bb DEF H | cc EFG I | aa CDE G | gh IJK M | ff Hij L |
| 3. aaa b FG | bbb c GH | hhh i MN | ddd c HI | fff g KL |
| 4. zyx abc | wvu dee | tsr ghi | qpo jkl | pon mno |
| 5. abc FGH | bcd GHI | def IJK | uvw ZAB | nmo RST |
| 6. hi KLM | op STU | ab EfG | bc FGH | im PQR |
| 7. aa cc ee gg | cc ee gg ii | dd ff hh ll | mm oo qq ss | oo uu vv ww |

8.	abcd HI	opqr VW	xyza EF	cdef JK	tuvw YZ
9.	aabb ffgg	ffgg kkll	kkll ppqq	ppqq uuvv	uuVV zaa
10.	aaAA eeFF	ppQQ uuVV	llMM qqRR	rrss wwXX	ooPP ttUU
11.	aaa eee iii	bbb fff jjj	ooo rrr vvv	mmm qqq uuu	ppp ttt xxx
12.	ccc ggg kkk	kkk ooo sss	ttt xxx bbb	bbb fff jjj	mmm qqq ttt
13.	pP MI	sS Po	qQ Nm	LL IH	vV Ts
14.	ccc eee HI	aaa ccc FF	bbb ddd GG	ooo qqq tT	mmm ooo RR
15.	bcd fgh	opq stu	abc efg	pqr tuv	tuu xyz
16.	aBC	BaC	abC	BCa	CBa
17.	KMpS	BKXz	PiMO	PHet	OIst
18.	LNMO	APBQ	EUFV	GWHX	CRDT
19.	PaKe	PiuS	PoKe	PoeK	PrtK
20.	SSTO	TTOU	OOTU	USTO	UUTS
21.	BATU	ZYSU	SRPN	FEGN	IJSO
22.	aabC	ccdE	eefG	ffIH	ggHI
23.	TSRQ	MLKJ	YXWV	NMLK	HGFD
24.	abCD	EFgh	RStu	MNop	IJkl
25.	BAT	HAT	RAT	EAT	FAT
26.	JTO	FDE	DGO	DNI	OUT
27.	TURNIP	PEAR	LUPIN	APPLE	LILAC
28.	TAB	POT	DEAR	LEVEL	HOLDS
29.	HEARS	DEARS	ERROR	FEARS	NEARER
30.	ppp TTA	ooo GGH	hhh TOY	iii OOW	uuu MMO

Key and Explanation

- 1.(c) The skipping pattern is: aB (cd) EF (gh) ij. This pattern is followed in all, except in (c).
- 2.(e) All medial letters should be capital.
- 3.(d) The pattern is 'aaab (cde) FG'.
- 4.(b) The pattern is 'zyx' and 'abc' i.e. 3 letters from end of alphabet and 3 letters from the beginning of the alphabet, maintaining the straight alphabetic order.
- 5.(c) It should have been 'mno (pq) RST'.
- 6.(c) 3 letters of the end should be capital letters.
- 7.(c) The last letters should have been 'jj' instead of 'll'.
- 8.(e) The letters in the end should have been AB instead of YZ.
- 9.(d) In place of capital 'V' small 'v' should be there.
- 10.(d) 'ss' should be capitalised.
- 11.(c) The pattern is: ooo (pqr) sss (tuv) www'
- 12.(e) In place of 'ttt' there should be 'uuu'. The pattern is ccc (def) ggg (hij) kkk.
- 13.(d) One initial and one final letter is small in all.
- 14.(d) Both T's should be capital, i.e. 'ooo qqq TT'
- 15.(e) It should have read as 'tuv xyz'
- 16.(c) Each group has 2 capital letters.
- 17.(d) Each group has only 1 small letter, except (d).
- 18.(e) In all others, 3rd letter is the next of the 1st in alphabet and 4th is the next of the 2nd in alphabet. For instance, in (b) A is the first letter and B is the 3rd letter. P is the 2nd letter and Q is the 4th letter.
- 19.(e) All have two vowels in small letters. (e) has no vowel at all.

- 20.(d) In all the first two letters are same.
 21.(e) In all the first two letters are consecutive in alphabet from backward order, i.e. BA, CD, etc.
 22.(d) In all others, the first two letters are repeated followed by one small and one capital letter, maintaining the alphabetic sequence.
 23.(e) Preceding letter of the first occupies, the 2nd position and one preceding the 2nd occupies the 3rd position and the one preceding the 3rd, occupies the 4th place.
 24.(a) Starts with two small letters, whereas all others end in two small letters.
 25.(d) Others have one vowel.
 26.(e) Others end in vowel.
 27.(d) Others begin and end with a consonant while (d) begins and ends with vowel.
 28.(e) Other words when backward, give meaningful words.
 29.(c) All other words start with consonant.
 30.(c) In others the first capital letters are repeated.

FINDING THE ODD NUMBER

Example Pick the odd man out:

- (a) 6 (b) 18 (c) 12 (d) 3 (e) 7

Answer: (e). All others are divisible by 3.

There are various relationships which can exist between the items. Several types of relationships have been identified and covered below. You do not need to remember the name of these types. You must understand the relationship and be able to solve the exercises given with each type.

Divisibility or non-divisibility by a certain number

These questions are of the type of the above example.

Exercises

	(a)	(b)	(c)	(d)	(e)
1.	515	875	380	590	876
2.	699	789	682	798	786
3.	688	686	376	867	594
4.	369	879	789	762	785

Answers 1.(e) 2.(c) 3.(d) 4.(e)

1. All are divisible by 5.
2. All are divisible by 3.
3. All are divisible by 2.
4. All are divisible by 3.

Uniformity of sum obtained by mathematical operations

Example

- (a) 579 (b) 885 (c) 696 (d) 398 (e) 876

Answer: (d). Digits in each group when totalled up the sum obtained is 21. In (d) the sum obtained is 20.

Exercises

	(a)	(b)	(c)	(d)	(e)
1.	986	689	995	788	963
2.	821	731	533	722	862
3.	724	364	643	823	736
4.	756	686	848	884	758

Answers 1.(e) 2.(e) 3.(e) 4.(a)

Odd, Prime and Even Number relationship**Example**

1. (a) 11 (b) 13 (c) 17 (d) 19 (e) 39

2. (a) 7 (b) 11 (c) 13 (d) 15 (e) 14

Answers: 1.(e) 2.(e)

Explanation

1. Except (e) all others are Prime Numbers.

2. Except (e) all others are Odd Numbers.

Exercises

	(a)	(b)	(c)	(d)	(e)
1.	7	5	1	17	16
2.	3	17	15	11	7
3.	5	17	23	37	9
4.	27	19	13	11	8

Answers 1.(e) 2.(c) 3.(e) 4.(e)

Repetition of certain digits in the group of numbers

Example (a) 539

(b) 638

(c) 730

(d) 731

(e) 751

Answer: (e). All groups have number 3 common in the centre.

Exercises

	(a)	(b)	(c)	(d)	(e)
1.	221	351	691	784	761
2.	13901	87901	90980	89901	78801
3.	781	258	608	984	341
4.	5760	6750	7650	8089	5067

Answers 1.(d) 2.(c) 3.(e) 4.(d)

Ascending and Descending orders of numbers

Example (a) 124

(b) 235

(c) 789

(d) 510

(e) 346

Answer: (d). Figures in each group are in increasing order whereas in (d) they are in decreasing order.

Exercises

	(a)	(b)	(c)	(d)	(e)
1.	369	468	942	279	368
2.	134	256	679	346	532
3.	976	843	732	698	431
4.	8743	7521	8310	1897	6321

Answers 1.(c) 2.(e) 3.(d) 4.(d)

Now attempt the following test and write down your answers. Compare them with the answers given after the test and study the explanations.

PRACTICE TESTS FINDING THE ODD NUMBER

DIRECTIONS: Out of the following five numbers (a e), one does not belong to the same classification (category). All others resemble each other in one or the other way. You have to find the odd one out, the number which does not belong to the category of others :-

	(a)	(b)	(c)	(d)	(e)
1.	8	4	16	10	17
2.	9	3	15	12	19
3.	102	210	320	365	390
4.	52163	25631	34424	5183	33442
5.	315	207	711	423	325
6.	3,7,5,11	11,17,19,23	3,29,7,5	3,11,13,3	2,4,3,5,7
7.	14	7	28	21	36
8.	63852	52638	85362	28365	28751
9.	3795	9359	5937	7355	3745
10.	11,3,3,17	41,5,3,47	71,7,3,17	37,14,19,7	67,71,3,5
11.	35 24	79 68	57 46	87 68	35 79
12.	67 19	71 11	41 19	61 15	89 41
13.	5,13,17	29,1,5	17,17,1	13,17,5	15,5,5
14.	65 83	83 47	34 79	65 23	43 67
15.	3535	7595	9575	7397	3579
16.	49	140	98	77	97
17.	98765	98756	987654	9876543	98765432
18.	37037 X 3	37037 X 6	37037 X 12	37037 X 9	37037 X 4
19.	121	12321	123321	12345321	12345654321
20.	876321	387315	349416	31896	372164
21.	6	18	12	3	7

22.	18	6	12	18	9
23.	7	17	37	5	9
24.	24	12	36	27	48
25.	14	28	21	41	35
26.	1	4	16	25	55
27.	9	25	36	144	78
28.	115	98	78	89	79
29.	189	199	178	198	235
30.	63	45	81	27	38

Key and Explanation

- 1.(e). All others are divisible by 2.
- 2.(e). All others are divisible by 3.
- 3.(d). All others are divisible by 2.
- 4.(e). Others total up 17 ($3 + 6 + 1 + 2 + 5 = 17$).
- 5.(e). Others total up 9 ($5 + 1 + 3 = 9$).
- 6.(e). Others are prime numbers. In (e) only last 3 are prime numbers.
- 7.(e). Others are divisible by 7.
- 8.(e). All contain same digits (23568).
- 9.(e). All are odd numbers, except (e) which has 3 odd and one even number.
- 10.(d). All contain prime number sets, except (d) which has an even number.
- 11.(e) Each 2 figure set consists of 2 odd numbers (Initially) and 2 (even numbers finally). (e) contains only odd numbers.
- 12.(e). All are pair of 1 prime and 1 odd number (e) contains only prime numbers.
- 13.(e) Total of all sets is 35.
- 14.(c) Pairs of odd and even numbers. First even number is followed by odd numbers in all (a), (b), (d), (e). In (c) pair of odd and even number is opposite.
- 15.(e). Two odd numbers followed by two prime numbers in all except in (c) where prime number is followed by odd number.
- 16.(e). All are product of multiplication of a figure by 7.
 $7 \times 7 = 49$, $7 \times 20 = 140$, and so on.
- 17.(b). All figures go on increasing backward and decreasing forward.
- 18.(e). Product of all (a-d) is uniform. (a) 111111
(b) 222222 (c) 333333 (d) 444444.
- 19.(d) Numbers read same backward and same forward.
- 20.(e). All total up 27, except (e) which totals up 23.
- 21.(e). All others are divisible by 3.
- 22.(e) All others are divisible by 2.
- 23.(e). All others are Prime numbers.
- 24.(d). In all the second integer is the double of the first, e.g. in (c) $36 = 3 \times 2 = 6$.
- 25.(d). All others are multiple of 7.
- 26.(e). All others are squares of 1,2,4,5.
- 27.(e). All others are squares.
- 28.(a). All others are less than 100.
- 29.(e). All others are less than 200.
- 30.(e). In all sets when two numbers are added will give 9.

Section Three

CODING AND DECODING TESTS

Codes are used for conveying secret messages from one place to another, especially in the defence services. These codes are based on various principles/patterns, which are required to be deciphered by the receiver, so as to get the correct message.

Coding and decoding tests are becoming very popular in competitive examinations. They call for careful observation and analytical aptitude. These tests can be broadly classified into several categories.

3.1 Lettercoding

The letters of the alphabet may be used in a coding scheme. The letters to be coded are allotted other letters to stand for them. Questions on lettercoding can be of different types. Examples of the important ones are given below.

ANALOGICAL LETTERCODING

These codes are based on the analogy given in the question itself as shown below.

Form 1

Example If 'SPTFA' stands for 'BLADE', how will you code 'BALE'?

Answer: 'STPA'

'BLADE' has been coded as 'SPTFA'. You will see that all the letters in the word 'BALE', which have to be coded, are also there in the word 'BLADE'. Hence all that needs to be done is to choose the relevant code letters from the code word 'SPTFA'. Thus, B becomes S, A becomes T, L becomes P, and E becomes A. Therefore 'BALE' will be coded as 'STPA'.

Exercises

DIRECTIONS If 'MODERN' and 'ORTHODOXY' (being opposites) are coded as 'YOUNGS' and 'OGBAOUOML' respectively, how will you code the words?

1. THORN

- (a) BAGOS (b) BAOSG
(c) BOASG (d) BAOGS
(e) BAGSO

2. REMOTE

- (a) GNOYBN (b) GYNOYB
(c) GNYONB (d) GNYOBN
(e) GNOYBN

3. XEROXED

- (a) MNGOMUN (b) MNGMOUN
(c) MNGOMOU (d) MNGOMNU
(e) MNGOMUG

4. METHOD

- (a) YNBOUO (b) YNABOU
(c) YNBOAU (d) YNBAOU
(e) YNBAUO

Answers 1.(d) 2.(d) 3.(d) 4.(d)

Form 2

Example ^{ZGTQZ EQRA EH DNKN YCU UGPV} 'XEROX COPY OF BILL WAS SENT' is coded as 'ZGTQZ EQRA QH DNKN YCU UGPV'. Based on this coding scheme, tick the code from the answer choices for each word given in the bold letters in the beginning of each question:

1. **WATER** (a) GVCTT (b) YCVGT
(c) EQARR (d) EAVER
2. **BLIST** (a) DNKOV (b) DNKUQ
(c) DNKVU (d) DNKUV
3. **CLOSE** (a) ENQUG (b) ENQVG
(c) EQNUG (d) ENOUG

Answers: 1.(b) 2.(d) 3.(a)

Explanation

1. 'WATER' Look for 'W' in key. You find it in the word 'WAS'. The corresponding code letter is 'Y'. This eliminates all answers except (b).

2. 'BLIST' A quick look at the answers will show that the first three letters, 'DNK' of all the choices are the same. Therefore it will be no use checking the code for 'BLI'. Check the code for the fourth letter, 'S'. You will find that it is 'U'. This eliminates answers (a) and (c). Check the code for 'T'. This is 'V'. Therefore the answer is (d).

3. 'CLOSE' A quick look at the answer choices and you see that it is no use checking the code for the first letter 'C'. Check the code for the second letter 'L'. This is 'N'. This eliminates answer (c). Check the code for the third letter 'O'. This is 'Q'. This eliminates answer (d). Check the code for the fourth letter 'S'. This is 'U'. So the correct answer is (a).

The 3 questions in the above example show you that a quick observation of the answer choices tells you which letter should be checked first. If the letter and their sequence, in more than one answer choice, are the same, do not waste time checking their code. First check the letters which are different. Finding ways like this can save you valuable time.

Exercises

DIRECTIONS: 'GET AWAY, FIRE BACKWARDS, MOVE SLOW' is coded in a defence message as 'BEN C~~D~~CI, OHOE PCTL~~D~~COXU, ZMWE VFMD'. Based on this coding scheme, tick the code from the answer choices (a-d) for each word given in bold letters in the beginning of each question:

1. **SLIM** *VFZH* (a) VFZH (b) ☒ VFHZ
MWEO (c) VFHX (d) VFHW
2. **OVER** (a) MWOE (b) MWZO
BOMD (c) ☒ MWEO (d) MWED
3. **GROW** (a) BOMW (b) BOMZ
BDCN (c) BOMT (d) ☒ BOMD
4. **GREAT** (a) BOENC (b) BOEQN
OEDCX (c) ☒ BOECN (d) BOEHC
5. **REWARD** (a) OEDNXE (b) OTDCOX
BCNE DCI (c) ☒ OEDCOX (d) OEDCOU
6. **GATEWAY** (a) BCNENCI (b) BENEHCU
QHOEDMMX (c) ☒ BCNEDCI (d) BCHNEHI
7. **FIREWOOD** (a) QUOEDNNX (b) QHOENMMX
XECXFI (c) QHONDCCX (d) ☒ QHOEDMMX
8. **DEADLY** (a) XECXEI (b) XENXFI
(c) XECXEI (d) ☒ XECXFI

Answers 1.(b) 2.(c) 3.(d) 4.(c) 5.(c) 6.(c) 7.(d) 8.(d)

Note In such questions don't look for any rule. Simply observe carefully which letter in the coded example stands for its corresponding letter in the uncoded key given in the instructions directions.

Form 3

Example Study the following code and its key. Using this code, decode the codes written in bold letters in the beginning of each question:

Code : L X P Z J Y Q M N B

Key : b a e s p r h i g t

1. **J Y P Z Z** (a) grass (b) ☒ press
(c) brass (d) gress
2. **Q P M N Q B** (a) cought (b) matery
(c) fights (d) ☒ height
3. **Z J Q P Y P** (a) ☒ sphere (b) thrown
(c) sought (d) special

Answers: 1.(b) 2.(d) 3.(a)

These are to be solved on the basis of the explanation already given in Form 2.

Exercises

Study the following code and its key. Using this code find appropriate codes from answer choices (a-d) for the words given in capital letters :

Code : n o p q r s t u v

Key : A B C D E F G H I

Code : w x y z

Key : J K L M

- | | | |
|-------------------|-------------------|-------------------|
| 1. KLICK | (a) x y u p x | (b) x p u p x |
| <i>klvkv</i> | (c) x g v p x | (d) x y v p x |
| 2. HIGH | (a) u v t v | (b) u v t u |
| <i>ohvtrv</i> | (c) v u t v | (d) v t u n |
| 3. BILLED | (a) o v y y t q | (b) o u p p r q |
| <i>bynt</i> | (c) o v y y s q | (d) o v y y r q |
| 4. FLAG | (a) s y m t | (b) s y n t |
| <i>tzou</i> | (c) t z o u | (d) s q n t |
| 5. MEDICAL | (a) z r q v p n y | (b) z r p v p n y |
| <i>wnpxny</i> | (c) z r q u p n y | (d) z r p u q u y |
| 6. JACKEL | (a) w n p x v y | (b) w u p z r y |
| <i>wnpxry</i> | (c) w n p u r q | (d) w n p x r y |
| 7. FAKED | (a) s n z r q | (b) s u x r q |
| <i>snxvq</i> | (c) s n x v q | (d) s n x r q |
| 8. MILK | (a) z y v x | (b) z v q x |
| <i>zvyx</i> | (c) z v y r | (d) z v y x |

Answers 1.(d) 2.(b) 3.(d) 4.(b) 5.(a) 6.(d) 7.(d) 8.(d)

CODING WITH A SPECIFIC PATTERN

Here, letters are allotted an artificial value but in a specific pattern. You have to first determine the pattern involved and then solve the question.

Example If 'MAILED' is coded as 'N B J M F E', how will you code the word 'ACTED'?

Answer 'B D U F E'

Here each letter stands for the next letter in the sequence. A becomes B, B becomes C, D becomes E, and so on. Therefore 'ACTED' becomes 'B D U F E'

Some commonly used patterns are given in this section.

Form 1: Forward Sequence Pattern

Example If 'QUIZ' is coded as 'RVJA', how will you code 'CLASS'?

Answer : 'D M B T T'

Q becomes R, U becomes V, I becomes J, Z becomes A. Here, each letter is coded by the next in alphabetic sequence, with the last letter of the alphabet 'Z' becoming the first, 'A'. Therefore 'CLASS' will be coded 'DMBTT'. You can use

the numbered alphabet (as explained on page 42) to help you to recognize the pattern. Write this down and keep it before you while solving such questions.

Exercise

If 'COLD' is coded as 'DPME', select appropriate codes from the answer choices for the words in capital letters:

- | | | |
|----------|---|---|
| 1. ZEAL | (a) AFBN | <input checked="" type="checkbox"/> (b) AFBM |
| | (c) AGBM | (d) AFCM |
| 2. CHINA | <input checked="" type="checkbox"/> (a) DIJOB | (b) BHIMB |
| | (c) DIJPB | (d) DJKMB |
| 3. BACK | (a) DBEM | <input checked="" type="checkbox"/> (b) CBDL |
| | (c) CBEL | (d) CBDM |
| 4. GIVEN | (a) HJWJM | (b) HKWJM |
| | (c) HJWJO | <input checked="" type="checkbox"/> (d) HJWFO |

Answers 1.(b) 2.(a) 3.(b) 4.(d)

Form 2 : Backward Sequence Pattern

Example If 'DATE' is coded as 'WZGV', how will you code 'COME'?

Answer : 'XLNV'

Here, the coding is done in backward alphabetic order, i.e., A is coded as Z, B as X, C as W, and so on. The numbered alphabet (Page 42) will help you to identify the pattern in such questions.

Exercises

If 'BEAT' is coded as 'ADZS', select appropriate code for the words given in capital letters:

- | | | |
|-----------|---|--|
| 1. TRACE | (a) USBDF | <input checked="" type="checkbox"/> (b) SQZBD |
| | (c) SQABD | (d) SQZDE |
| 2. ZEAL | <input checked="" type="checkbox"/> (a) YDZK | (b) YFZK |
| | (c) AFBM | (d) YFAK |
| 3. HIGHLY | (a) GHEGKZ | <input checked="" type="checkbox"/> (b) GHFGKX |
| | (c) GHFIKX | (d) GHFIMX |
| 4. ROAST | <input checked="" type="checkbox"/> (a) QNZRS | (b) QNZTS |
| | (c) QNZTU | (d) QNZSV |

Answers 1.(b) 2.(a) 3.(b) 4.(a)

Form 3: Skipped Sequence Pattern

Example If 'ACT' is coded as 'DFW', how will you code 'BAD'?

Answer: 'EDG'

Use the numbered alphabet and you will see that two letters are omitted in the alphabetic sequence. 'A' (skip 2) 'D'; 'C' (skip 2) 'F'; 'T' (skip 2) 'W'; and so on. Schemes of such coding can be of several types, with different numbers of letters skipped. Remember that in such schemes, circular continuity of letters is maintained. This means that 'Z' is followed by 'A' without disturbing the continuity.

Exercises

- If 'BUS' is coded as 'DWU', how will you code 'ROBS'?
 (a) SPCT (b) TQCV
 (c) TQDU (d) SPDU
- If 'BEAT' is coded as 'EHDW', how will you code 'ROAD'?
 (a) SQCF (b) URDG
 (c) TQCF (d) UREG
- If 'ROAD' is coded as 'WTFF', select appropriate code for 'BEAT'.
 (a) URDG (b) UREG
 (c) TQCF (d) GJFY
- Code for 'LATE' is 'PEXI', select code for 'TRACE'.
 (a) XVELI (b) XVEGI
 (c) XVFGI (d) XUEGH

Answer 1.(c) 2.(b) 3.(d) 4.(b)

Explanation

- In question (1), codes are formed by skipping one letter, i.e., A (B) C; B (C) D; and so on.
- In question (2), codes are formed by skipping two letters, i.e., A (BC) D; B (CD) E; and so on.
- In question (3), codes are formed by skipping four letters, i.e., A (BCDE) F; B (CDEF) G; and so on.
- In question (4), codes are formed by skipping three letters, i.e., A (BCD) E; B (CDE) F; and so on.

CODING/DECODING BY COMPARISON AND CONTRAST

Example Decode the underlined letters in column I from the same row of choices provided under column II. Each small letter in column II stands for some capital letter in column I. However, the small letters in column II are not arranged in the same order as their corresponding letters in column I. The code is the same for all the items in column I.

Column I

- G M S A Y
- B S M Y A
- C M A Y B
- N G M S Y
- S Y N A J

Column II

- u a g m s
 s g m v u
 w g u s v
 s a g h m
 m h u d s

Answer: G = a; B = v; C = w; N = h; J = d

Explanation 1

- (i) Look at items 1 and 2 of column I 'GMSAY' and 'BSMYA'.

The letters MSAY occur in both items. This means that four letters of the codes of items 1 and 2 must be the same.

- (ii) Look at the codes of items 1 and 2 in column II.

The letters u, g, m and s occur in both. Thus the code for 'G' is 'a' and the code for 'B' is 'v'.

(iii) Look at item 3 'CMAYB'.

The letters M, A, Y, and B occurred in earlier items.

Thus the code for 'C' must be a letter which did not appear in the earlier codes.

Thus the code for 'C' is 'w'.

(iv) Look at item 4 N G M S Y

The letters G, M, S and Y occurred in earlier items. Thus the code for 'N' must be a letter which did not appear in the earlier codes. A search for such a letter leads you to 'h'.

(v) Look at item 5 S Y N A J

The letters S, Y, N and A occurred in earlier items. Thus the code for 'J' must be a letter which did not appear in earlier codes. Thus the code for 'J' is 'd'.

Explanation 2

Another quick way of solving these problems is as follows:

(i) Question 1 requires you to find the code for 'G'. Look for G in other items. You find it in 4. Therefore, there must be at least one common letter from the code letters of items 1 and 4. Write down the code letters of item 1:

u a g m s

(ii) Comparing these with the code letters of item 4, strike out any letter that is not common:

a g m s

(iii) 'G' does not occur in items 2,3 and 5. Therefore the code letter for 'G' must not occur in the codes for items 2,3 and 5. Strike out any letter that does occur in these items:

a g m s

Thus the code for 'G' is 'a'

Try following this procedure for the other items. It takes much less time than it seems.

Exercises

In each question the capital letters in column I are written in a code in small letters in column II. Each small letter in column II stands for the same capital letter in column I. The small letters are not arranged in the same order as the capital letters. Study all the questions carefully and find out which small letter stands for the underlined capital letter in each question in column I.

Q. A

Column I

Column II

	(a)	(b)	(c)	(d)	(e)
1. O B <u>S</u> T U	e	v	w	x	r
2. U T B A <u>S</u> ✓	w	x	e	d	v
3. U O <u>B</u> T S	r	x	e	v	w
4. D <u>A</u> B T X ✓	g	e	d	w	a
5. L O <u>T</u> Q S ✓	r	w	t	x	o
6. A <u>Q</u> S O T ✓	d	x	v	r	w

Answers 1.(d) 2.(c) 3.(a) 4.(c) 5.(b) 6.(b)

Explanation

Item 1: 'U'

e v w x r

Item 2: 'B'

e v w x r

Item 3: 'O'

evwxr

Item 4: 'A'

wxedu

Item 5: 'T'

evwxr

Item 6: 'Q'

rwtvo

Q. B

1. B D F G H

(a) (b) (c) (d) (e)

i k j g e

2. H D F G L

o i j g k

3. F B D K L

i g n o e

4. H G B L S

k v e o j

5. H L S G R

u j v o k

Q. C

1. M P R T U

s u x w p

2. U R P T I

x s w l u

3. T R U P M

p w u x s

4. X T R P U

w u s x a

5. D I P R M

g l u p s

Q. D

1. A C E G L

f h j o d

2. E G C P L

s j o f h

3. L G E C B

o e j h f

4. E C L N G

h f q j o

5. A L G T T

o d j w w

Answers

B. 1.(e) 2.(a) 3.(e) 4.(b) 5.(a)

C. 1.(e) 2.(d) 3.(b) 4.(b) 5.(e)

D. 1.(e) 2.(a) 3.(b) 4.(c) 5.(e)

CODING BY RULE APPLICATION*Example*

DIRECTIONS: The word given in capital letters has been coded in five different ways marked (a-e). It is followed by five questions, each containing a word in capital letters and its corresponding code. You have to determine which coding scheme has been followed in each question :

N A G P U R

(a) O B H Q V S

(b) P C I R W T

(c) R U P G A N

(d) Q D J S X U

(e) R E K T Y V

Questions

Word

Code

1. BACKING

G N I K C A B c

2. TOURS

U P V S T a

3. SUPER

V X S H U d

4. SOUPS

W S Y T W e

5. TERMS

V G T O U b

Answers 1.(c) 2.(a) 3.(d) 4.(e) 5.(b)

Explanation

1. The order of letters has been reversed BACKING is written as GNIKCAB. Hence the answer is (c).

2. The letters of the word are represented by the next letter in the alphabet.

T = U; O = P; U = V; R = S; and S = T

This system is followed in (a).

3. Letters of the code are obtained by skipping two letters in alphabetic order, i.e., S = (TU) V. The same pattern is followed in (d).

4. Letters of the code are obtained by skipping three letters in alphabetic order, i.e., S = (TUV) W. The same scheme is followed in (e).

5. Letters of the code are obtained by skipping one letter in alphabetic order, i.e., T = (U) V. The same pattern is followed in (b).

Exercises

The word COFFEE has been coded in five different ways:

- | | | |
|--------|------------|------------|
| COFFEE | (a) DPGGFF | (b) EQHHGG |
| | (c) FRIHHH | (d) GSJJII |
| | (e) BNEEDD | |

Which coding scheme has been followed in the questions 1–5?

- | Word | Code |
|------------|---------|
| 1. NOODLES | OPPEMFT |
| 2. SOUPS | UQWRU |
| 3. TENDER | WHQGHU |
| 4. LIMITED | PMQMXIH |
| 5. WHILE | VGHKD |

The word COMBINE has been coded in five different ways:

- | | | |
|---------|-------------|-------------|
| COMBINE | (a) BNLAHMD | (b) ENIBMOC |
| | (c) DPNCJOF | (d) EQODKPG |
| | (e) FRPELOH | |

Which coding scheme has been used in questions 6–10?

- | Word | Code |
|------------|---------|
| 6. HOTEL | KRWHO |
| 7. PEONS | QFPOT |
| 8. HELPER | JGNRGT |
| 9. NOODLES | MNNCKDR |
| 10. TENDER | REDNET |

Answers 1.(a) 2.(b) 3.(c) 4.(d) 5.(e) 6.(c) 7.(c) 8.(d) 9.(a) 10.(b)

CODING BY REVERSING LETTERS

Example If 'TSEREVE' and 'NOITACUDE' stand for 'EVEREST' and 'EDUCATION' respectively, how will you code 'RED FORT'?

Answer: TROF DER

You must quickly recognise that the code is the reverse of the given word. The answer is obviously TROF DER which is reverse form of 'RED FORT'.

Example 'RETSAMROAD' and 'MROWBOOK' represent two well known word groups in partially coded form. Decipher the correct forms of these word groups.

Answer: ROAD MASTER and BOOK WORM

The initial word is given second position and the second word is coded by reversing the letters.

Example Decipher the following coded word groups:

(a) RETSINIM PRIME

(b) RETSINIM CHIEF

(c) YTILIBA MENTAL

Answer: (a) PRIME MINISTER (b) CHIEF MINISTER (c) MENTAL ABILITY

These codes can be easily decoded with the help of the second word. This second word gives you a lead or hint. They just require quickness and imagination. The initial words have been coded by reversing them.

Exercise

1. If 'COFFEE' is coded as 'EEFFOC', how will you code 'NOODLES'?

(a) MNNCKDR

✓(b) SELDOON

(c) RSSHPIW

(d) QRRGOHV

2. If 'SOUPS' is coded as 'SPUOS', how will you code 'TENDER'?

(a) SDMCDQ

✓(b) REDNET

(c) XIRHIV

(d) WHQGHU

3. If 'ENIBMOC' stands for 'COMBINE', decode 'REPLEH'.

(a) PEONS

(b) COFFEE

✓(c) HELPER

(d) PROPER

4. 'SELDOON' stands for 'NOODLES', how will you decipher 'DETIMIL'?

(a) TENDER

✓(b) LIMITED

(c) WHILE

(d) HOTEL

Answers 1.(b) 2.(b) 3.(c) 4.(b)

Now that you have covered the various types of letter coding, attempt the following test. Compare your answers with the ones given and study the explanations.

PRACTICE TESTS LETTER CODING

1. If 'TEACHER' and 'HIGHLY' are written as 'X W P B R W M' and 'Q S N R D Z' respectively, how will you code the word 'CHARITY'?

(a) B P R N S B Z

(b) B R P M S Z B

(c) B R P M S D Z

✓(d) B R P M S X Z

(e) B P R N B S Z

2. 'SCHOOL = PNKKB' and 'ME = ZY', how will you write 'COOL HOME'?

✓(a) NKKBIKZY

(b) NKKLIKZY

(c) PKKNIKZY

(d) NKKBPKZY

(e) NKKIBKZY

3. 'XYMNO PQ' is a certain code which is deciphered as 'N B O U I G T'. Based on this scheme of coding, select code for the word 'OUTGOING'.

- (a) M N O Q P N P ✓(b) M N Q P M O X P
(c) P W D C T N P (d) M N O P Q N P
(e) M N Q O P Y P

4. If 'CL I P O E' stands for 'M T D F B E', how will you code 'POLICE'?

- (a) F B T D M F ✓(b) F B T D M E
(c) F B T D E M (d) F T B D M F
(e) F B D T M E

5. 'X Y M N O P Q' is decoded as 'R H O U I G T' code 'OUTRIGHT'.

- (a) M N Q O X N Y Q (b) M N O Q X Y N Q
✓(c) M N Q X O P Y Q (d) M N I O X Y P Q
(e) M N I O Y X P Q

6. 'LOAD' is coded as 'MPBE' and 'DRIVE' as 'ESJWF', how will you code 'LADDER'?

- (a) M D E E F S ✓(b) M B E E F S
(c) N C F F G T (d) M B E E S P
(e) O C F F G T

7. 'GO AT ONCE' is a coded message received as 'JB SM BQZY' and you are required to relay the answer in a coded message 'GO TO GATE'. Select the code you will be using based on the scheme applied in the example here:

- (a) H P B U P M D F (b) J B M K J S M Y
(c) I M C S Q M D F (d) J B M K J M S Y
✓(e) J B M B J S M Y

8. 'START = WALKA' and 'BUDPI = XZFMQ', what would be 'STUPID' = ?

- (a) B A Z M O E (b) W A Z N O F
(c) W A Z M M F (d) B A Z M Q F
✓(e) W A Z M Q F

DIRECTIONS: Based on the following code scheme, encode the words given in the questions 9-13.

Code Z A X B Y O T W C M I
Key B Y E T F A I R U L D

9. BEAUTY

- ✓(a) Z X O C B A (b) T X A C I F
(c) Z X O C F I (d) Z X O F C I
(e) Z X C O F I

10. FAILED

- ✓(a) Y O T M X I (b) Y O T M X D
(c) Y O T M I X (d) A I R M X D
(e) Y O T X I M

11. FLAIR

- ✓(a) Y M O T W (b) Y M U T W
(c) Y M I O W (d) Y M O I W
(e) Y M W I O

12. TEARFUL

☒ (a) BXOWYCM

(b) IXOMYCM

(c) BXOWICM

(d) BXOWMYC

(e) BXWOYCM

13. If 'HBPQMNOT' stands for 'SUNDAY TO', how will you write 'YOU DO SO' using the coding scheme used for SUNDAY TO? NTBQTHB

☒ (a) NTBQTHB

(b) NTBQTHB

(c) NTQBTHB

(d) NTQBTHB

(e) NTBQHTB

DIRECTIONS: Questions 14–19 are based on the following coding pattern:

If 'EFGHIJK' are coded letters representing 'VUTSRQP', choose the right code for the words given in capital letters from the answer choices (a-e) given under each;

14. LIMIT

(a) KNRNC

☒ (b) ORNRG

(c) JKOKG

(d) RSTSG

(e) MHLHS

15. SOUR

(a) IFLT

☒ (b) HLFH

(c) LIFT

(d) IHIF

(e) FLTI

16. POCKET

(a) KLXPUC

(b) KLXUPG

(c) KLXGUP

(d) KLXVPG

☒ (e) KLXPVG

17. GROUP

☒ (a) TILFK

(b) TILEL

(c) TILGH

(d) TILHG

(e) TFGFK

18. HIGH

(a) STRS

(b) RJHR

(c) GLOG

(d) RSTR

☒ (e) SRTS

19. ZERO

(a) BUHN

(b) AVIM

☒ (c) AVIL

(d) AUTL

(e) AVTI

DIRECTIONS: 'GO AHEAD' is coded as 'JRDKHDG' and 'STOP' is coded as 'VWRS', how will you code/decode the correct answer from the answer choices (a c):

20. FIRE

(a) URIV

(b) IUJG

(c) LUHI

☒ (d) ILUH

(e) JRSG

21. SHOOT

- ☒ (a) V K R R W
 (c) T J P P R
 (e) V L Q Q U

- (b) U M S S X
 (d) V K S S W

22. RETURN

- ☒ (a) U H W X U Q
 (c) U H W X U R
 (e) U X W V U R

- (b) V I X U Q M
 (d) U H W X V R

23. V W D U W

- (a) STAIN
 (c) SPORT
☒ (e) START

- (b) STEPS
 (d) STAND

24. HEAD

- (a) O H D G
☒ (c) K H D G
 (e) K B G A

- (b) N U E G
 (d) K H G D

25. G R Z Q

- (a) OWNS
 (c) DONE
 (e) SHUT

- ☒ (b) DOWN
 (d) COME

26. If 'H J S M' means 'GIRL', what does 'R N E S' mean?

- (a) BOYS
 (c) TOYS
 (e) BULL

- (b) COWS
☒ (d) SOFT

27. If 'D B M D V U U B' stands for 'CALCUTTA', how will you write 'BOMBAY'?

- (a) D Q O D D X
 (c) D P N C B X
 (e) C P N V F Z

- ☒ (b) C P N C B Z
 (d) C P M C B Z

28. If 'OVER' is coded as 'QYIW' and 'UP' as 'WS' then 'STAR' will be coded as _____?

- (a) U W E V
 (c) U V B S
 (e) U W E X

- (b) U W D V
☒ (d) U W E W

29. In a certain code 'DELHI' is written as 'C D K G H', 'MADRAS' as 'L Z C Q Z R', how will 'PATNA' be coded?

- (a) O Z T M Z
 (c) Q B U M B
 (e) O Z M S Z

- (b) O Z S M Z
 (d) O Z T Z M

30. If 'FIRE' is coded for a secret message to be teleprinted as 'E H Q D'. How should the answer 'DONE' be relayed?

- (a) D M O E
 (c) D L N C
 (e) D M P E

- (b) C N M D
 (d) D N P E

31. 'N P W F' is a secret code for 'MOVE'. You have to telex the reply 'DIFFICULT' using the code based on the scheme used to code MOVE

- (a) EJGGJDVMU (b) FKHHKEWNY
 (c) EJGGJEVMU (d) EJCCJDVMU
 (c) EJGCEJVMU
32. If A = E, B = F, C = G and H = L, how will you code 'GO AHEAD'?
- (a) KSFLIFH (b) HPBIFBE
 (c) KSGLIGH (d) HPBIFDE
 (c) KSELIEH
33. If 'WHILE' is coded as 'XIJMF', how will you code 'HOTEL'?
- (a) JQVGN (b) IPUFM
 (c) KRVHO (d) LSWIP
 (c) LETOH

DIRECTIONS: If 'TENDER' is coded as 'SDMCDQ', select appropriate code for the following words :

34. HOTEL
- (a) LETOH (b) KRVHO
 (c) GNSBK (d) GNSDI
 (c) GNSDK
35. SOUPS
- (a) PNTQS (b) RNTOR
 (c) SPUOUS (d) RMTOR
 (c) TPVQT
36. PEONS
- (a) ODMNR (b) SNOEP
 (c) ODNMR (d) ODNMS
 (c) ODNMT
37. LIMITED
- (a) DETIMIL (b) KHLHSDE
 (c) KHPHSDF (d) KHLHSDC
 (c) KHLHSDC
38. If 'TENDER' is written as 'XIRHIV', how will you write 'HOTEL'?
- (a) KRVHO (b) LSWIP
 (c) LSVIP (d) LSXIP
 (c) LSWIQ
39. If 'SELDOON' means 'NOODLES', what does 'SPUOS' means?
- (a) DOMED (b) BOMED
 (c) TOMED (d) SOUPS
 (c) TOEDS
40. If 'FRHHH' stands for 'COFFEE', how will you write 'NOODLES'?
- (a) RSSHPIW (b) PQQFNGU
 (c) ORRGOHV (d) RSSHPIW
 (c) SELDOON

DIRECTIONS: The following questions are based on a code language. In each question the capital letters in column I are written in a code in small letters in column II. Each small letter in column II stands for some capital letter in column I. The

small letters are not arranged in the same order in which the capital letters in column I are arranged. They are mixed up/jumbled. Study the two columns carefully to find out the small letter or code letter which stands for the underlined capital letter in column I.

A

Column I

Column II

41. L O B E Q
 42. O L C T M
 43. B L O P Q
 44. P L L O B
 45. O B P L T
 46. B L P O Q

- | (a) | (b) | (c) | (d) | (e) |
|-----|-----|-----|-----|-----|
| g | d | t | i | w |
| u | l | e | g | d |
| h | i | g | d | t |
| d | g | t | d | h |
| g | d | t | h | l |
| h | i | t | g | d |

B

47. G B S L C
 48. C B S G P
 49. B S M B G
 50. D B P S G
 51. S G O B C
 52. T A G S O

- | | | | | |
|---|---|---|---|---|
| q | a | r | h | v |
| h | v | e | q | r |
| h | q | v | b | q |
| q | e | h | s | v |
| v | h | d | q | r |
| p | i | d | h | v |

Answer Key - Letter Coding

- | | | | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1.(d) | 2.(a) | 3.(b) | 4.(b) | 5.(c) | 6.(b) | 7.(e) | 8.(e) | 9.(a) |
| 10.(a) | 11.(a) | 12.(a) | 13.(a) | 14.(b) | 15.(b) | 16.(e) | 17.(a) | 18.(e) |
| 19.(c) | 20.(d) | 21.(a) | 22.(a) | 23.(e) | 24.(c) | 25.(b) | 26.(d) | 27.(b) |
| 28.(d) | 29.(b) | 30.(b) | 31.(a) | 32.(e) | 33.(b) | 34.(e) | 35.(b) | 36.(c) |
| 37.(d) | 38.(d) | 39.(d) | 40.(c) | 41.(b) | 42.(d) | 43.(e) | 44.(e) | 45.(e) |
| 46.(b) | 47.(e) | 48.(a) | 49.(b) | 50.(d) | 51.(e) | 52.(c) | | |

Explanation

Q.1 to 13

Direct letter substitution.

Q.14 to 19

Here the coding scheme is A = Z, B = Y, C = X, and so on.

Q.20 to 25

The code used in these questions is based on the skipping pattern. Each letter is coded with the fourth one in alphabetic order, i.e., A = (BC)D, B = (CD)E, C = (DE)F, D = (EF)G and so on. Use the numbered alphabet.

Q.26

A letter of the alphabet stands for the next in the sequence, i.e., A = B, B = C, C = D, and so on. In other words, code letters are obtained by taking the following letter in the sequence. In GIRL, G stands for H, I for J, R for S and T for U. Therefore, R = S, N = O, E = F and S = T giving 'RNES' = 'SOFT'

Q.27

Similar pattern as of 26.

Q.28

Use the numbered alphabet and you will see the pattern:

O skip 1 letter = Q; V skip 2 letters = Y;

E skip 3 letters = I; R skip 4 letters = W;

U skip 1 letter = W; P skip 2 letters = S.

- Q.29 Use the numbered alphabet to see the pattern. The first letter is coded as the letter previous to it. i.e., $D = C$, $F = E$, $B = A$, and keeping the circular coding continuity of alphabet, i.e., after Z, A will follow.
- Q.30 Preceding letter is taken for coding the following letter in the sequence, i.e., $B = A$, $C = B$, etc.
- Q.31 A is coded as B, C as D, and so on.
- Q.32 Substitute the letters directly.
- Q. 33 Every letter here stands for its preceding letter, i.e., B for A, C for B, D for C, etc.
- Q.35 to 37 Go one letter back in the case of every letter of the word. $A = Z$, $B = A$, $C = B$, $D = C$, $E = D$, and so on.
- Q.38 Three consecutive letters are skipped to obtain the code letter. Hence A will be coded as (B, C and D to be skipped) E; $B = (CDE)F$; $C = (DEF)G$; $D = (EFG)H$; etc.
- Q.39 Letters are written backwards, $SOUPS = SPUOS$.
- Q.40 Two letters are consecutively skipped, i.e., $A = (BC)D$; $B = (CD)E$; etc.

3.2 Number Coding

In this coding scheme, the letters of the alphabet are allotted a numerical value. There are several methods of allotting numerical values to letters of alphabet. These will be discussed in this section.

ANALOGICAL CODING WITH NUMBERS

This is done by correlating a letter with its numerical equivalent given in the instruction (Direction) part of the question.

Example: If 'LODES' is coded as '46321', how will you code the word 'DOES'?

Answer: '3621'

You must first recognise that all the letters of 'DOES' are included in the letters of 'LODES' for which you have the code D = 3, O = 6, E = 2, S = 1. Therefore 'DOES' = '3621'.

Exercises

If 12345671586 stands for 'TERMINATION',

Only for 3 days.
Late Fee Rs. 5/- per day

1. What number does 371586 stand for?

- | | |
|--|------------|
| (a) MOTION | (b) NATION |
| <input checked="" type="checkbox"/> (c) RATION | (d) NOTION |

2. Decode the number 4271?

- | | |
|----------|--|
| (a) RATE | <input checked="" type="checkbox"/> (b) MEAT |
| (c) NEAT | (d) TIME |

3. What number code stands for 'MOTION'?

- | | |
|--|------------|
| (a) 458569 | (b) 438586 |
| <input checked="" type="checkbox"/> (c) 481586 | (d) 458685 |

4. If 'BEARING' is coded as 1234567, how will you code 'RARE'?

- | | |
|--|----------|
| (a) 1234 | (b) 4324 |
| <input checked="" type="checkbox"/> (c) 4342 | (d) 4542 |

IF 'PROBATES' is coded as 12345678, give appropriate codes for the following words:

5. BEATS

- | | |
|---|-----------|
| (a) 12345 | (b) 47548 |
| <input checked="" type="checkbox"/> (c) 47568 | (d) 47658 |

6. PORES

- | | |
|---|-----------|
| <input checked="" type="checkbox"/> (a) 13278 | (b) 12378 |
| (c) 12437 | (d) 13728 |

Answers 1.(c) 2.(b) 3.(c) 4.(c) 5.(c) 6.(a)

CODING WITH SPECIFIC PATTERN

In this type of test, the numerical values allotted to the letters are related to the position number of the letter in alphabet. You have to first determine the pattern followed in coding from the example in the question. There are several different patterns of which the important ones are given here. The numbered alphabet will be useful. Write it down and keep it before you.

Form 1: Forward Sequence Numbering

Example If in a certain code 'ACE' = '1-3-5', how will you code 'ACTED'?

Answer: 1-3-20-5-4

A look at the numbered will reveal the code.

The letters are allotted the corresponding position number they have in the alphabet, i.e.,

A = 1, B = 2, C = 3, and so on; and X = 24, Y = 25 and Z = 26.

Exercises

1. If 'LOAD' is coded as '12-15-1-4', how will you code 'BAKE'?

(a) 2-1-10-5

✓(b) 2-1-11-5

(c) 2-1-12-5

(d) 2-1-10-4

'DEAL' is coded as '4-5-1-12'. Based on this scheme, code and decode the following:

2. SHOOT

(a) 19-8-14-14-20

(b) 19-7-15-15-20

✓(c) 19-8-15-15-20

(d) 19-8-14-15-20

3. '2-5-1-20'

(a) BELT

✓(b) BEAT

(c) BEAM

(d) BRIM

4. LADY

(a) 10-1-4-23

✓(b) 12-1-4-25

(c) 12-1-4-22

(d) 12-1-4-23

Answers: 1.(b) 2.(c) 3.(b) 4.(b)

Form 2: Backward Sequence Numbering

Example If 'DATE' is coded as '23-26-7-22', how will you code 'ZEAL'?

Answer: '1-22-26-15'

A look at the numbered alphabet will reveal the code.

The letters are allotted numbers from end to beginning (Z-A) maintaining normal alphabetic sequence in the reverse direction, i.e., A = 26, B = 25, C = 24, and so on; and X = 3, Y = 2, Z = 1.

Exercises If 'RATE' is coded as 9-26-7-22, how will you code and decode the following:

1. BANK

(a) 25-26-19-16

(b) 1-2-14-11

✓(c) 25-26-13-16

(d) 25-24-12-16

2. '13-12-9-14'

(a) NOTE

✓(b) NORM

(c) NEAT

(d) NEAR

3. QUICK

(a) 10-8-17-24-16

✓(b) 10-6-18-24-16

(c) 10-5-17-24-16

(d) 10-6-17-24-18

4. ZEAL

✓(a) 1-22-26-15

(b) 1-22-26-14

(c) 1-23-25-16

(d) 1-22-25-15

5. '20-22-26-9'

- (a) BEAR (b) FEAR
☒ (c) GEAR (d) MAKE

6. LOAD

- (a) 13-11-25-21 (b) 15-12-26-23
 (c) 15-12-25-21 (d) 15-12-24-20

7. GOAT

- (a) 20-12-25-7 (b) 20-11-26-7
☒ (c) 20-12-26-7 (d) 15-12-24-20

8. If PEN = 11-22-13, PENCIL will be ?

- (a) 11-21-13-24-18-15 (b) 11-22-13-24-18-15
 (c) 11-22-13-24-18-15 (d) 11-22-13-24-16-15

Answers 1.(c) 2.(b) 3.(b) 4.(a) 5.(c) 6.(b) 7.(c) 8.(c)

Form 3: Random Sequence Numbering

Example If 'CABLE' is coded as '6 4 5 15 8', how will you code 'BACK'?

Answer: '5 4 6 14'

A quick look at the numbered alphabet shows that letter A = 4 and subsequent scheme follows, i.e., B = 5, C = 6, etc. In this scheme of coding, the numbering of letter of the alphabet could start from any number keeping the letters in their normal alphabetic sequence.

Exercises

1. If 'ABLE' is coded as '23-24-8-1', how will you code 'DARK'?

- (a) 25-22-13-6 (b) 26-23-14-7
 (c) 26-24-12-6 (d) 26-23-13-7

2. If 'BAD' is '5-4-7', supply the appropriate number code for 'NATION'?

- (a) 17-4-22-12-18-17 (b) 17-4-23-12-18-17
 (c) 17-4-22-11-18-17 (d) 17-4-23-12-19-17

3. If 'NOR' = '2-3-6', how will you express 'REST' in similar coding scheme?

- (a) 6-19-6-7 (b) 5-19-5-8
 (c) 6-19-7-8 (d) 6-18-5-8

4. If 'BOX' is '16-3-12', how will you code 'NOT'?

- (a) 2-4-7 (b) 2-3-8
 (c) 3-4-7 (d) 2-3-7

If 'BAD' is coded as '5-4-7', supply codes for the following words:

5. DATE

- (a) 7-4-22-8 (b) 7-4-23-8
 (c) 7-4-21-8 (d) 7-5-23-8

6. BACK

- (a) 5-3-6-14 (b) 5-4-6-14
 (c) 5-4-5-14 (d) 5-4-6-13

7. DARK

- (a) 7-4-20-14 (b) 7-4-21-13
 (c) 7-4-21-14 (d) 7-4-20-13

If 'ACT' = 23-25-16', how will you code the following words:

8. BLOW

- (a) 23-8-11-19 (b) 24-8-10-19

- (c) 24-8-11-19 (d) 24-8-11-18
9. BAD (a) 24-25-23 (b) 24-24-26
(c) 24-23-26 (d) 24-25-27
10. BANK (a) 24-23-9-7 (b) 24-25-9-7
(c) 24-23-9-6 (d) 24-23-10-7

Answers 1.(b) 2.(b) 3.(c) 4.(b) 5.(b) 6.(b) 7.(c) 8.(c) 9.(c) 10.(d)

Form 4: Mathematical Operations with the Position Number of the Letters

A

Example 'LATE' is written in a certain code as 38. How will you code 'MAKE' using the same coding scheme?

Answer : 30

Look at the numbered alphabet and write down the number corresponding to the letters of the word 'LATE',

L	A	T	E
12	1	20	5

The fact that the code for 'LATE' is 38, gives you a clue that the code is probably obtained by performing an arithmetical operation of the numbers of each letter. Try addition:

$$12 + 1 + 20 + 5 = 38$$

Thus the code for 'MAKE' is,

$$13 + 1 + 11 + 5 = 30$$

B

Example If 'HOTEL' is coded as 12, how will you code 'BORE'?

Answer : 10

Use the numbered alphabet to write the numbers corresponding to the letters in 'HOTEL'

H	O	T	E	L
8	15	20	5	12

$$8 + 15 + 20 + 5 + 12 = 60$$

They total up to 60. The code for 'HOTEL' is 12. How are 60 and 12 related?
 $60 \div 5 = 12$. There are five letters in 'HOTEL'.

To encode 'BORE'

B	O	R	E
2	15	18	5

$$2 + 15 + 18 + 5 = 40$$

There are 4 letters in 'BORE'. $40 \div 4 = 10$

C

Example If 'HOTEL' is coded as 55, how will you code 'BORE'?

Answer: 36

H	O	T	E	L
8	15	20	5	12

$$8 + 15 + 20 + 5 + 12 = 60$$

The code for HOTEL is 55. How does 55 related to 60?

$55 = 60 - 5$. There are 5 letters in HOTEL.

To encode 'BORE'

B O R E

$$2 + 15 + 18 + 5 = 40$$

4 letters in BORE. Therefore the code is $40 - 4 = 36$.

D

Example In secret message, 'HOTEL' has been coded as 300. What will be the code for 'BORE'?

Answer: 160

H O T E L

$$8 + 15 + 20 + 5 + 12 = 60$$

$$300 = 60 \times 5 \text{ (60 \times number of letters)}$$

To encode 'BORE'

B O R E

$$2 + 15 + 18 + 5 = 40$$

4 letters in BORE. Therefore code = $40 \times 4 = 160$

E

Example In secret coded message 'HOTEL' is coded as 30. How will you write 'BORE' using the same coding pattern?

Answer: 20

We know position numbers of letters in HOTEL total up to 60. How 60 and 30 are related? It is obvious, 30 is half of 60, or by dividing 60 by 2 we get 30. Using the same formula, the letters of BORE total up to 40. By dividing 40 by 2 we get 20. Hence the code for BORE = 20.

Exercise

1. If CAR is 22, SCOOTER = ?

(a) 33

(b) 44

(c) 11

(d) 95

2. BOOK = 43 and PEN = 35, COPY = ?

(a) 48

(b) 60

(c) 59

(d) 79

3. PENCIL = 59 and PEN = 35, SCALE = ?

(a) 30

(b) 45

(c) 40

(d) 35

4. DRAMA is coded as 37 and STAGE as 52. How will you code ACTOR?

(a) 56

(b) 50

(c) 57

(d) 67

5. If AROMA = 24, GRAND = 22, KWALITY = ?

(a) 40

(b) 62

(c) 55.5

(d) 50.5

6. If DISTAMPER is coded as 52.5 and WALLS as 33.5, how will you code PLASTER using the same coding scheme?

(a) 40.5

(b) 45.5

(c) 48.5

(d) 55.5

7. SUPER = 79, SUPREME = 97, LABOUR = ?

(a) 79

(b) 69

(c) 89

(d) 49

8. If ROTARY and ROTARIAN are coded as 97 and 96, how will you code ROTARACT?

- (a) 98 (b) 96
(c) 89 (d) 59
9. LIME = 39, WHITE = ?
(a) 66 (b) 56
(c) 65 (d) 75
10. If DRIVER = 76 and TRUCK = 73, what would be MOPAD?
(a) 45 (b) 55
(c) 49 (d) 59
11. If OPTICAL and OPTICIAN are coded as 76 and 87 respectively, GLASSES will be _____?
(a) 80 (b) 82
(c) 84 (d) 86
12. If PLANT is coded as 12.60, what will be the code for LEAVES?
(a) 11 (b) 10
(c) 10.5 (d) 10.66
13. WHEEL = 10.6, how will you code BELT?
(a) 32.2 (b) 30.5
(c) 9.75 (d) 8.25
14. If in a certain code 'DEMOCRATIC' is coded as '9.10' how will you code 'AGITATION'?
(a) 11.50 (b) 10.60
(c) 10.66 (d) 11.8
15. If 'PAPER' is 11.20, PENCIL is 9.83, what will be the 'PEN'?
(a) 12.80 (b) 11.60
(c) 1.66 (d) 13.8

Answers 1.(d) 2.(c) 3.(c) 4.(c) 5.(d) 6.(b) 7.(b) 8.(b) 9.(c) 10.(c) 11.(b) 12.(d)
13.(c) 14.(c) 15.(c)

Explanations

- (a) For questions 1–4, position numbers of the letters in alphabet are added up.
(b) For questions 5–6, position numbers of the letters are added up and then divided by two.
(c) For question 7–11, the position numbers of the letters are added up.
(d) For questions 12–15, the position numbers of the letters added up and then divided by the number of letters each word has.

Form 5: Ad hoc Numbering of Letters

Letters are allotted different values which are indicated in the beginning of the question (in the direction/instruction part) and based on the given scheme of letter numbering, coding and decoding, questions are framed. We can as well call this 'analogical coding' as described in the beginning of Sec. 3.2.

Example A shopkeeper uses a code 'OLISPAH' = 28, where O = Re 1, L = Rs.2, I = Rs.3, and so on. Bearing this coding scheme in mind, answer the following questions:

1. What price does 'SOAP' denote?
(a) Rs.120 (b) Rs.18
(c) Rs.16 (d) Rs.61
2. What is the price of an article marked 'OIL'?

- (a) Rs.10
(c) Rs.8
3. How will he code price of an article worth Rs.22?
(a) PALE
(c) HAIL
- (b) Rs.6
(d) Rs.9
(b) HOPS
(d) POLISH
- Answer 1.(c) 2.(b) 3.(d)

$$\begin{array}{ccccccc} O & L & I & S & P & A & H \\ 1 & + & 2 & + & 3 & + & 4 & + & 5 & + & 6 & + & 7 & = & 28 \end{array}$$

1. S O A P
4 + 1 + 6 + 5 = 16
2. O I L
1 + 3 + 2 = 6
3. The 'E' in 'PALE' eliminates it as a choice. Code the other words to get the answer.

Exercise

In a certain code 'CHERAWTS' = 36, where C = 1, H = 2, E = 3 and so on, code and decode the following with the help of the information given above.

1. How will you code size 34 cm?
(a) SR
(c) ER
(b) EA
(d) EW
2. If you have indicated on a tag on an article its worth as Rs 15, how will you make use of the above coding scheme?
(a) CA
(c) CR
(b) CS
(d) CHERA
3. How will you mark Rs. 137? using this coding scheme?
(a) CSR
(c) CET
(b) CRW
(d) CRE
4. How will you indicate size 45 cm?
(a) RS
(c) RA
(b) RH
(d) RSC
5. With the help of above coding scheme, how will you express the date '4th July'?
(a) R/C
(c) R/S
(b) RW
(d) R/T

Answers 1.(c) 2.(a) 3.(c) 4.(c) 5.(d)

3.3 Miscellaneous Coding Schemes

A

Example In the following words, the codes are not under their respective positions. Study them carefully and answer the questions that follow:

FUSS	SEAL	MALE
7850	9677	7540

SAIL	MEALS	FAIR
2508	9546	28507

After arranging the above, give codes for the following:

- | | | |
|----------|----------------------------------|-----------------------|
| 1. FUSS | (a) 7540
(c) 9546
(e) 2508 | (b) 7850
(d) 9677 |
| 2. SAIL | (a) 9677
(c) 7850
(e) 2508 | (b) 7540
(d) 9546 |
| 3. MALE | (a) 7850
(c) 9546
(e) 2408 | (b) 7540
(d) 2508 |
| 4. MEALS | (a) 2508
(c) 9546
(e) 7850 | (b) 28507
(d) 9677 |
| 5. FAIR | (a) 9546
(c) 7540
(e) 7850 | (b) 9677
(d) 2508 |

Give words for the following code numbers:

- | | | |
|----------|-------------------------------------|------------------------|
| 6. 0877 | (a) LESS
(c) FUSS
(e) FLAR | (b) MESS
(d) FELL |
| 7. 9856 | (a) FEAR
(c) SEAR
(e) MAIR | (b) REAR
(d) LEAR |
| 8. 08578 | (a) FLAIR
(c) LEASE
(e) MEAKS | (b) SALES
(d) MALES |
| 9. 7850 | (a) FALE
(c) SALE
(e) SLUR | (b) MAIL
(d) SEAL |
| 10. 2877 | (a) LESS
(c) MILL
(e) FELL | (b) FILL
(d) MESS |

Answers: 1.(d) 2.(b) 3.(d) 4.(b) 5.(a) 6.(a) 7.(a) 8.(c) 9.(d) 10.(d)

Explanation I:

Number code containing two similar digits at the end will obviously go under 'FUSS'. Hence FUSS is coded as 9677. Now there are two words having 'EA' common in the middle and so there are two number codes having identical medial digits, i.e., 7850 and 28507. Since 'MEALS' has five letters obviously the number code will be of five digits. Hence MEALS = 28507, leaving 7850 which will stand for 'SEAL'. Now there are words 'SAIL' and 'FAIR' having 'AI' common. Their codes should have similar medial digits, which we have in 7540 and 9546. We know from code 9677 that 9 = F and 7 = S. Therefore 7540 = SAIL and 9546 = FAIR. Now code 2508 is left to be deciphered which will naturally go under 'MAIL' as it is the only word left now for which a code is to be searched.

Explanation II

- (i) There is only one word with five letters – MEALS. Thus its code must be :

M E A L S
2 8 5 0 7

Therefore Answer 4 is (b)

(ii) All letters of MALE are contained in MEALS (except 'S')

M A L E

2 5 0 8

Answer 3(d)

(iii)

S A I L

7 5 4 0

Answer 2(b)

(iv)

F A I R

9 5 4 6

Answer could be (a) or (c). But 7 5 4 0 = S A I L.

Therefore the answer is 5(a) and F A I R

9 5 4 6

(v)

F U S S

9 6 7 7

Therefore the answer is 1(d).

Answers 6-10 are easy to obtain.

Exercise

In the following words the codes are not under their respective positions:
INSTALL, NATIONS, STINGS

I N S T A L L

3 2 4 5 0 3

N A T I O N S

4 5 3 2 1 7 7

S T I N G S

5 1 2 4 9 5 3

I N S T I L L

9 6 2 4 9 5 3

S T A T I O N S

4 5 3 2 4 7 7

O P T I O N S

3 2 1 2 4 9 5 3

After studying the above codes and words, give codes for the following words:

1. LOTIONS

(a) 4532177

(b) 4532477

(c) 7924953

(d) 7532173

2. POSTAL

(a) 693417

(b) 694217

(c) 693517

(d) 693217

3. STILL

(a) 32577

(b) 32477

(c) 54277

(d) 32677

4. SANITATIONS

(a) 31642124953

(b) 31562124953

(c) 31542124953

(d) 31552124953

Decode the following numbers:

5. 2933

(a) STOP

(b) TELL

(c) TILL

(d) TOSS

6. 2477

(a) TELL

(b) TOSS

(c) TILL

(d) POST

7. 32477

- (a) STOPS
(c) POSTAL

- (b) STILL
(d) PISTON

8. 643295

- (a) POSTAL
(c) STILLS

- (b) STOPS
(d) PISTON

Answers: 1.(c) 2.(d) 3.(b) 4.(c) 5.(d) 6.(c) 7.(b) 8.(d)

B CODING WITH CHARACTERS AND SIGNS

In this coding scheme, special characters are used along with letters and numbers (digits). The special characters that could be used for the purpose are:

- Punctuation marks
- Greek and Roman characters
- Mathematical symbols
- Dots and Lines (including hyphen/dash)
- Common signs like asterisk (*), @, (), ", ', !, etc.

As the scheme followed is ad hoc, it is a sort of analogical coding and only needs careful deciphering of the codes from the instructional part of the question.

Example If 'PENCIL' is coded as, ? @ , = ; 7, and PAPER is coded as, ? 9 ? @ 5, how will you code CLIP?

Answer: = 7 ; ?

Letters of the words PENCIL and PAPER are coded by special symbols and digits. The scheme followed in this example is:

PENCIL
? @ , = ; 7
PAPER
? 9 ? @ 5

Exercise

COST is coded as, = @ ?

DUPE is coded as ; = 6 *

How will you code the following words:

1. DUST

- (a) = @ ? *

- (c) ; = @ ?

- (b) 6 * ; =

2. POST

- (a) ? ; = *

- (c) 6 = @ ?

- (b) * ? = ;

3. STOP

- (a) @ * = 6

- (c) ; = * 6

- (b) @ ? = 6

4. DEEP

- (a) ; @ @ 6

- (c) ; * * 6

- (b) ' = = 6

5. PEEP

- (a) 6 @ @ 6

- (c) 6 * * 6

- (b) 6 = = 6

6. COPE

- (a) ; @ = *
(c) , = 6 *

(b) ; = '@ 6

Answers: 1.(c) 2.(c) 3.(b) 4.(c) 5.(c) 6.(c)

PRACTICE TESTS: NUMBER CODING AND MISCELLANEOUS CODING DEVICES

1. How will you code 'ACCOMMODATE' if S and V are coded as 8 and 5 respectively?

- (a) 26-24-24-12-14-14-12-23-7-26-22
(b) 26-24-24-12-14-14-23-12-7-26-22
(c) 26-25-25-12-14-14-23-12-26-7-22
(d) 26-24-12-14-14-23-21-12-26-7-22
(e) 26-24-24-12-14-14-12-23-26-7-22

2. If III stands for 2, IIII for 3 and II for 1, how will you solve the following?

$$\text{IIII} - \text{II} + \text{III} + \text{IIII} = ?$$

- (a) IIIIII (b) IIIIIII
(c) IIIII (d) IIII
(e) VII

3. If 'BARS' = 10 and 'BEERT' = 10, 'DEEZ' will be _____?

- (a) 15 (b) 12
(c) 14 (d) 10

4. 'ADARSHI' = 53, SCHOOL = 66, STUDENT = _____?

- (a) 90 (b) 97
(c) 89 (d) 96

5. In a certain code language 'CAR = 19' and 'TRUCK = 68' then what will be the code for 'TAXI'?

- (a) 60 (b) 63
(c) 50 (d) 56

6. PEN = 32, PAPER = 51, DESK = ?

- (a) 40 (b) 45
(c) 85 (d) 35

7. If 'DEAR' is coded as 7 and 'BEARS' as 9, what should be the code for 'WAX'?

- (a) 10 (b) 12
(c) 16 (d) 10

'POSTER' and 'MOON' are coded as '234678' and '5331' respectively. How will you code the following words:

8. MOST

- (a) 5436 (b) 3546
(c) 5346 (d) 5376

9. STOPS

- (a) 46314 (b) 46754
(c) 46324 (d) 46234

10. STERN

- (a) 465871 (b) 46581
(c) 46781 (d) 46671

11. POEM

(a) 2375

(b) 2175

(c) 2475

(d) 2365

12. STEMS

(a) 46574

(b) 46734

(c) 46754

(d) 46753

In a certain code language, 'EXAMINATIONS' is coded as '123456375869'. Give appropriate codes for the words given in capital letters:

13. NOMINATION

(a) 6854637586

(b) 6845637586

(c) 8645637586

(d) 6845635786

14. TIMES

(a) 74519

(b) 76419

(c) 75419

(d) 73419

15. MATES

(a) 43619

(b) 43718

(c) 43519

(d) 43719

16. If M = 13 and O = 15, code 'DEAF'.

(a) 4616

(b) 4316

(c) 4516

(d) 4516

17. If 2554 and 7 5 20 are codes for BEED and GET respectively, how will you code 'HIDE'?

(a) 8745

(b) 7945

(c) 8935

(d) 8945

18. HIGH = 5645 and DEEM = 12210, how will you code 'FEEL'?

(a) 2338

(b) 3449

(c) 3229

(d) 4337

19. If 'HELD' and 'KILL' are coded as '5291' and '8699' respectively, how will you write 'HIDE'?

(a) 4512

(b) 6712

(c) 5612

(d) 3612

20. RUST = 9-6-8-7 and BOARD = 25-12-26-9-23, how will you code 'BEAT'?

(a) 25-23-24-7

(b) 25-21-26-7

(c) 25-22-25-7

(d) 25-22-26-7

21. If B = 25 and C = 24, encode '96872'.

(a) DUSTY

(b) HASTY

(c) RUSTY

(d) POSTS

'GOPAL' is coded as '84321', and 'TREES' as '56779'.

Based on the above coding scheme, give codes for the following words:

22. STRESS

(a) 958799

(b) 965799

(c) 956799

(d) 856788

23. GREAT

(a) 85725

(b) 86625

(c) 86925

(d) 86725

24. STAG

(a) 9428

(b) 9628

(c) 9328

(d) 9528

25. PETER

- | | |
|-----------|-----------|
| (a) 97576 | (b) 39596 |
| (c) 37576 | (d) 84346 |

In a certain code 'FELANPRDI' is coded as '123456789'. Based on this coding language, give codes for the following words:

26. RIDE

- | | |
|----------|----------|
| (a) 7682 | (b) 3982 |
| (c) 6982 | (d) 7982 |

27. LEAP

- | | |
|----------|----------|
| (a) 3416 | (b) 3246 |
| (c) 3217 | (d) 3215 |

28. DEEP

- | | |
|----------|----------|
| (a) 7221 | (b) 8331 |
| (c) 8226 | (d) 6221 |

29. LEARN

- | | |
|-----------|-----------|
| (a) 31275 | (b) 32165 |
| (c) 32175 | (d) 32475 |

30. RAIL

- | | |
|----------|----------|
| (a) 7431 | (b) 7341 |
| (c) 7431 | (d) 7493 |

31. AIRPIPE

- | | |
|-------------|-------------|
| (a) 4876962 | (b) 4976862 |
| (c) 4976952 | (d) 4976962 |

32. LAND

- | | |
|----------|----------|
| (a) 3485 | (b) 3457 |
| (c) 3548 | (d) 3458 |

33. PRIDE

- | | |
|-----------|-----------|
| (a) 67892 | (b) 68962 |
| (c) 67981 | (d) 67982 |

Give words for the following code numbers:-

34. 1223

- | | |
|----------|----------|
| (a) REEL | (b) FEEL |
| (c) DEER | (d) PEER |

35. 7247

- | | |
|----------|----------|
| (a) FEAR | (b) PEAR |
| (c) REAR | (d) RAIR |

36. 647482

- | | |
|------------|------------|
| (a) PARADE | (b) DIPROC |
| (c) LEANED | (d) RADAR |

37. 3246

- | | |
|----------|----------|
| (a) PEAR | (b) LEAP |
| (c) REAP | (d) FEAR |

If '245673' means 'PLAYER', then:

38. 6742 means,

- | | |
|----------|----------|
| (a) RAPE | (b) YELP |
| (c) PLAY | (d) LAID |

39. 'LAYER' will be coded as,

- | | |
|-----------|-----------|
| (a) 43673 | (b) 45673 |
|-----------|-----------|

(c) 45653

(d) 45674

In a certain code language, 'FADENOCMT' is coded as '345687921'. Based on this code language, give appropriate number codes for the following words:

40. MOON

(a) 3668

(b) 2668

(c) 2778

(d) 2779

41. COAT

(a) 8742

(b) 9741

(c) 9742

(d) 9641

42. FENCE

(a) 36796

(b) 36876

(c) 36896

(d) 36976

43. DEAF

(a) 5463

(b) 5643

(c) 5645

(d) 5634

Based on the above code language, give words for the following numbers:

44. 5786

(a) FANE

(b) DONE

(c) TONE

(d) CONE

45. 3641

(a) NEAT

(b) FEAT

(c) TEAM

(d) MEAN

46. 3456

(a) MADE

(b) FADE

(c) RADE

(d) LADE

47. 8665

(a) TEEM

(b) NEED

(c) FEET

(d) TONE

48. DRIVER = 7, PEDESTRIAN = 11, ACCIDENT = ?

(a) 9

(b) 8

(c) 6

(d) 18

49. 'PROMOTION' in a certain code is written as 'Q S P 8 9' how will you code 'DEMOTION'?

(a) D E 9 8

(b) E F 9 8

(c) E F 8 9

(d) E G 8 9

50. If A = 0.0, B = 0.1, C = 0.2 and so on, how will you write F and K using this coding scheme?

(a) 5.0 and 1.5

(b) 0.5 and 0.1

(c) 0.5 and 1.0

(d) 0.05 and 1.01

Answers

- 1.(c) 2.(a) 3.(d) 4.(d) 5.(c) 6.(d) 7.(c) 8.(c) 9.(c) 10.(c)
 11.(a) 12.(c) 13.(b) 14.(c) 15.(d) 16.(d) 17.(d) 18.(c) 19.(c) 20.(d)
 21.(c) 22.(c) 23.(d) 24.(d) 25.(c) 26.(d) 27.(b) 28.(c) 29.(d) 30.(d)
 31.(d) 32.(d) 33.(d) 34.(b) 35.(c) 36.(a) 37.(b) 38.(b) 39.(b) 40.(c)
 41.(b) 42.(c) 43.(b) 44.(b) 45.(b) 46.(b) 47.(b) 48.(a) 49.(c) 50.(c)

Explanation

1. Letters are numbered in backward sequence; Z = 1, A = 26.

3. Position numbers of letters are added up and divided by the number of letters in each word.

4. Total up position numbers of the letters and subtract the number of letters in each word.

5. Same as above.

6. Same as above.

7. Total up position number of letters and divide by the number of letters in each word.

16. Alphabet is serially numbered 1 to 26. Position number of letters are written as the letters appear in the word.

18. Ad hoc numbering scheme. Numbering started here from D = 1, E = 2, F = 3 and so on.

19. Same as above.

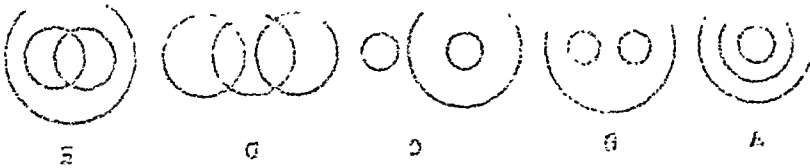
20. Backward numbering of alphabet. Z = 1, A = 26.

21. Backward numbering of alphabet.

48. Count number of letters in a word and add one to get the coded number.

49. 'MOTION' is coded as '89' and letters preceding to it are coded for the immediately following next one: P is coded as Q, R is coded S and so on:

50. The coding scheme followed here is that each letter in ascending order from A to Z increases in value by 0.1, starting with A = 0.0. A look at the numbered alphabet will help you get the codes for F and K.



Questions

1. Criminals, Pick-pockets, Arsonists
2. Dogs, Friendly animals, Cats
3. Potatoes, Vegetables, Eatables
4. Lipstick, Milk, River water
5. Food, Curd, Spoons

Answers: 1(E) 2(D) 3(A) 4(B) 5(C)

Explanation

1. Both Arsonists and Pick-pockets come under the class of Criminals. However, some Pick-pockets can be Arsonists and vice versa.



Section Four

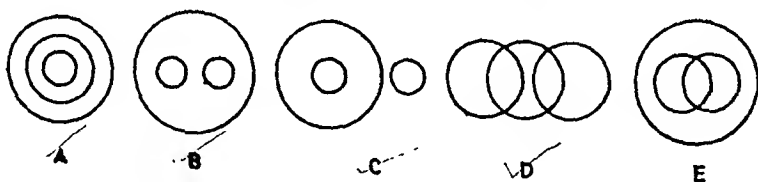
LOGICAL DIAGRAMS

In these tests a relationship is to be established between two or more items represented by diagrams. The items represented by the diagrams may be individuals, a particular group/class of people (items), etc.

4.1 Type 1

Example

DIRECTIONS: You are required to choose from the five diagrams the one that best illustrates the relationship among the three given classes in the questions that follow. (The size of the circles does not indicate relative sizes of classes.)



Questions

1. Criminals, Pick-pocketers, Arsonists *EE*
2. Dogs, Friendly animals, Cats *D*
3. Potato, Vegetables, Eatables *R*
4. Liquids, Milk, River water *B*
5. Food, Curd, Spoons *C*

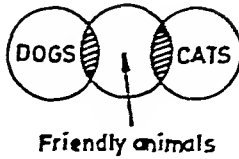
Answers: 1.(E) 2.(D) 3.(A) 4.(B) 5.(C)

Explanation

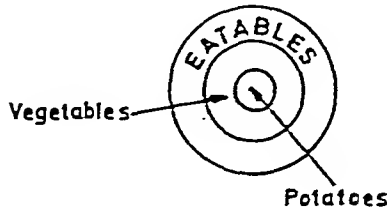
1. Both Arsonists and Pick-pocketers come under the class of Criminals. However, some Pick-pocketers can be Arsonists and vice versa.



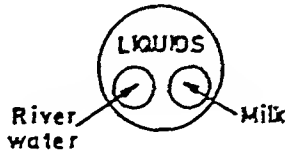
2. Dogs and Cats represent separate classes. However, both can be friendly animals.



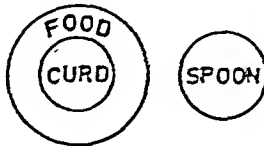
3. All Potatoes are covered under the class of Vegetables. Vegetables are covered under the class of Eatables.



4. Milk and River water both are covered under the class of Liquids; but both are different from each other, representing separate classes.



5. Curd is covered under the class of Food. Spoons, however, belong to a separate class.

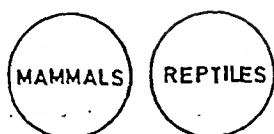


HINTS

To tackle questions on Logical Diagrams, following hints will be helpful:

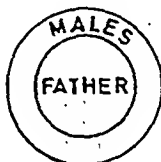
1. These tests are based on the concept of *class*. A class is a group of items all having something common. Hence a class of MAMMALS will be all those members of the animal kingdom who are MAMMALS and REPTILES will not be included in this class. (See figure on the next page)

2. *Classes can contain classes* A class may contain or be contained within another. Example: FATHERS will be contained in the larger group of MALES.

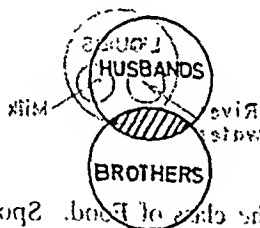


(figure for Hint 1)

But it is not necessary that all MALES should be FATHERS. Refer the following figure.

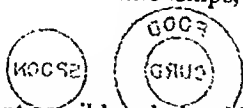


3. One class may be partially contained in another. Example HUSBANDS and BROTHERS. All BROTHERS are not necessarily HUSBANDS and all HUSBANDS are not BROTHERS. The partial containment of one class in another is depicted by the following figure. The shaded portion depicts that some HUSBANDS can be BROTHERS and some BROTHERS can be HUSBANDS.



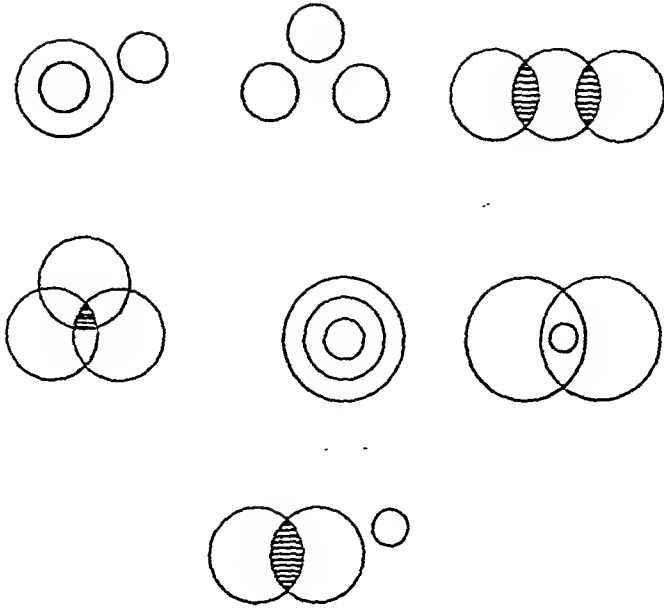
From these we conclude three basic relationships, viz.,

- (1) Complete exclusion
- (2) Complete inclusion
- (3) Partial inclusion



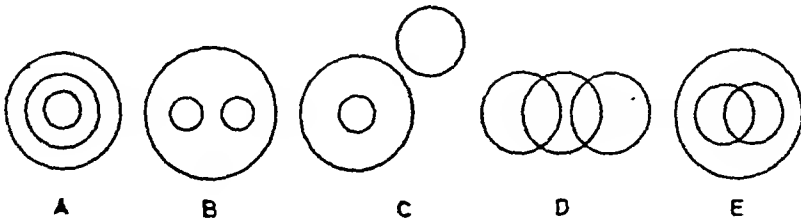
These three cases represent possible relationships between two classes. Now if another class is added (making 3 classes in all), it means that two more relationships have to be determined. This results in ten possible relationships among various classes: A class could be represented by any shape (circles, squares, triangles, etc.).

The situation can be better understood by examining diagrams 9 to 18 below.



Exercise

DIRECTIONS: Choose from the five diagrams marked A, B, C, D and E the one that best illustrates the relationship among three given classes in each of the questions that follow:

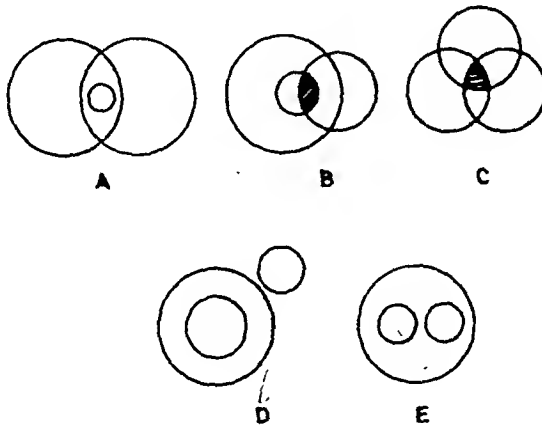


Questions

1. Minutes, Days, Months *A*
 2. Non-vertebrates, Vertebrates, Living beings *B*
 3. Uttar Pradesh, Jhansi, Madhya Pradesh *C*
 4. Thumsup, Gold spot, Soft Drinks *B*
 5. Women, Teachers, Doctors *D*
 6. Alcohol, Water, Things that can evaporate *B*
 7. Chilli, Salt, Vegetables *C*
 8. Reading material, Newspapers, Magazines *B*
 9. Bus, Scooter, Conveyance *B*
 10. Students of Law, Students of Science, Men *D*
- Answers 1.(A) 2.(B) 3.(C) 4.(B) 5.(D) 6.(B) 7.(C) 8.(B) 9.(B) 10.(D)

Exercise

DIRECTIONS: From among the five figures marked A-E given below, choose the figure that represents the relationship among the three classes denoted by the terms given in each question that follow:

**Questions**

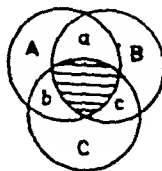
1. Writers, Guitarists, Musicians
2. Young creatures, Colts, Horses
3. Flies, Locusts, Insects
4. Liquid, Soda water, Milk shake
5. Females, Mothers, Fond of children
6. Men, Cricketers, Married men
7. Doctors, Readers, Men
8. Toyota car, Fiat car, Cars
9. Plants, Ashoka trees, Grass
10. People, Doctors, Cows

Answers 1.(B) 2.(A) 3.(E) 4.(E) 5.(B) 6.(B) 7.(C) 8.(E) 9.(E) 10.(D)

4.2 Type 2

Example The diagram below depicts BSc (Hons.) students, studying Chemistry, Physics and Mathematics. What does the shaded portion depict?

- A = Students studying Chemistry
 B = Students studying Physics
 C = Students studying Mathematics

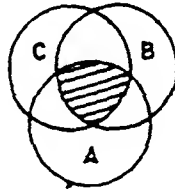


- (a) students who study Chemistry and Physics
- (b) students who study Physics and Mathematics
- (c) students who study Chemistry, Physics and Mathematics ✓
- (d) students who study Chemistry and Mathematics

Answer: (c) The shaded portion is common to all the three circles. Therefore it represents those students who are studying all the three subjects.

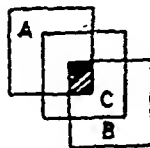
Exercises

1. The following diagrams represents club membership of people in a city, where A = members of LEO club, B = members of JEO club, and C = members of DEO club. What does the shaded portion represent?



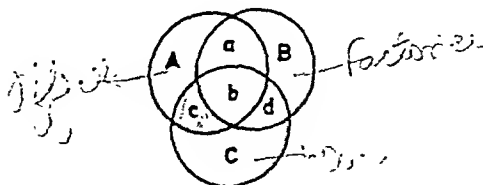
- (a) members who are common in both LEO and JEO clubs
- (b) members who are common in both JEO and DEO clubs
- (c) members who are common in all the three clubs ✓
- (d) members who are common in more than two clubs

2. The following diagrams depicts various media by which people get news. Here A represents TV as the medium B represents radio, and C represents newspapers. What does the shaded portion depict?



- (a) People getting news from only one medium
- (b) People getting news from TV as well as newspapers
- (c) People getting news from Radio as well as TV
- (d) People getting news from Radio, TV as well as Newspapers. ✓

3. The diagram below shows group of people earning their living by various means, viz.,



A = by working in offices

B = by working in factories

C = by running their own business

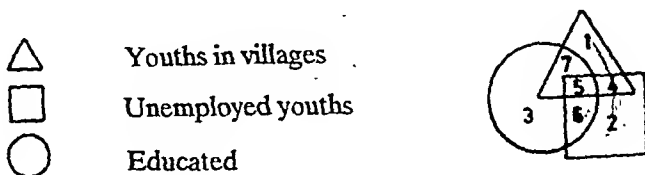
Which portion in the diagram depicts people who are earning their living from their own business as well as by working in offices?

- (a) (b) (c) (d)

Answers 1.(c) 2.(d) 3.(c)

4.3 Type 3

Example Study the diagram given here carefully and answer the questions that follow:






- Uneducated unemployed youths in villages are represented by?
(a) 5 (b) 4 (c) 6 (d) 7
- Educated unemployed youths in villages are represented by?
(a) 6 (b) 5 (c) 7 (d) 4
- Educated youths in villages are represented by?
(a) 5 (b) 4 (c) 6 (d) 7
- Educated unemployed youths are represented by?
(a) 3, 6 (b) 7, 5 (c) 5, 6 (d) 4, 5
- What does number 6 represent?
(a) unemployed youths
(b) unemployed educated youths
(c) unemployed educated youths in villages
(d) educated youths in villages
- What does number 4 represent?
(a) educated unemployed youths
(b) uneducated youths in villages
(c) educated employed youths
(d) unemployed youths in villages who are not educated.
- What does number 7 represent?
(a) unemployed youths
(b) uneducated unemployed youths
(c) educated youths in villages
(d) uneducated youths in villages
- Unemployed youths are represented by?
(a) 4, 5, 6, 7 (b) 6, 2, 7, 1 (c) 4, 2, 5, 6 (d) 4, 2, 5, 3

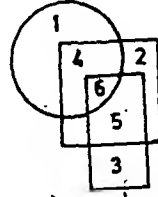
Answers: 1.(b) 2.(b) 3.(d) 4.(c) 5.(b) 6.(d) 7.(c) 8.(c)

Explanation: There are three classes represented in the diagrams. The overlapping areas represent partial containment of one class within another. The numbers which are outside the overlapping areas represent individual classes. The numbers in the overlapping areas represent areas contained in other classes as well, having members common to classes overlapped.

Exercise




I Study the diagram given here and answer the questions that follow:

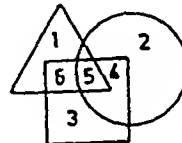
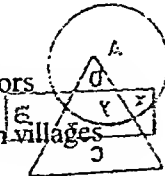
-  Workers who are members of Union
-  Workers who are hardworking
-  Workers who are experienced



- Hard working and experienced workers, not members of the Union are represented by?
(a) 4 (b) 3 (c) 2 (d) 5
- Workers who are members of the Union as well as hardworking and experienced are represented by?
(a) 5 (b) 3 (c) 6 (d) 4
- Which number represents hardworking workers who are neither experienced nor members of the Union?
(a) 5 (b) 3 (c) 1 (d) 2
- Number 4 represent
(a) members of the Union
(b) members of the Union as well as hardworking and experienced workers
(c) hardworking and experienced workers not members of the Union
(d) hardworking workers members of the Union who are not experienced
- Experienced workers who are neither hardworking nor members of the Union are represented by?
(a) 3 (b) 2 (c) 1 (d) 4

II Study the diagram given below and answer the questions that follow:

-  Qualified Doctors
-  Experienced Doctors
-  Doctors working in villages



- The qualified and experienced doctors working in villages are represented by?
(a) 2 (b) 6 (c) 4 (d) 5
- The qualified and experienced doctors working outside villages are represented by?
(a) 5 (b) 4 (c) 6 (d) 5

3. Experienced but not qualified doctors working in villages are represented by which number?

- (a) 3 (b) 2 (c) 4 (d) 5

4. Doctors who are neither qualified nor experienced but working in villages are represented by which number?

- (a) 1 (b) 2 (c) 3 (d) 4

5. Qualified doctors working outside villages are represented by?

- (a) 3 (b) 4 (c) 6 (d) 1

6. Number 4 in the diagram represents:

- (a) doctors working in villages
(b) doctors not working in villages
(c) qualified doctors working in villages
(d) experienced doctors working in villages

III



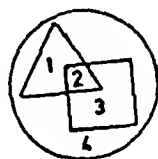
Criminals



Hard-core criminals



Terrorists



1. Hard-core criminals who are terrorists are represented by?

- (a) 1 (b) 3 (c) 2 (d) 4

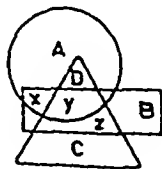
2. Terrorists who are not hard-core criminals are represented by?

- (a) 2 (b) 3 (c) 4 (d) 1

3. Number 4 represents?

- (a) terrorists who are not hard-core
(b) hard-core criminals who are not terrorists
(c) criminals who are neither terrorists nor hard-core criminals
(d) criminals who are terrorists

IV In the following diagram, the circle represent College Professors, the triangle stands for Surgical specialists, and Medical specialists are represented by the rectangular. Answer question 1-5 based on the diagram:



1. College professors who are also surgical specialists are represented by?

- (a) A (b) B (c) C (d) D

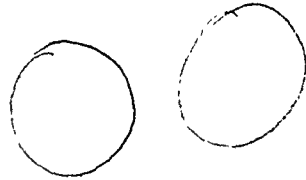
2. Surgical specialists who are also medical specialists but not professors, are represented by?

- (a) x (b) y (c) z (d) D

3. College professors who are also medical specialists are represented by?
 (a) y (b) z (c) x (d) a
4. 'B' represents?
 (a) professors who are not medical specialists
 (b) professors who are not surgical specialists
 (c) professors who are neither medical nor surgical specialists
 (d) medical specialists who are neither professors nor surgical specialists.
5. 'C' represents?
 (a) college professors
 (b) medical specialists
 (c) surgical specialists
 (d) medical and surgical specialists

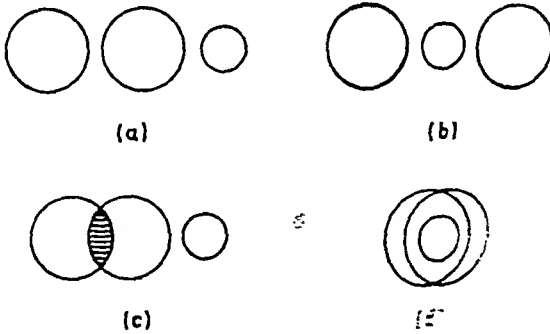
Answers

- I 1.(d) 2.(c) 3.(d) 4.(d) 5.(a)
 II 1.(d) 2.(c) 3.(c) 4.(b) 5.(d) 6.(d)
 III 1.(c) 2.(d) 3.(c)
 IV 1.(d) 2.(c) 3.(c) 4.(d) 5.(c)



4.4 Type

Example If TV singers are represented by a large circle on the left, and Radio singers by a large circle on the right, which combination will best represent the



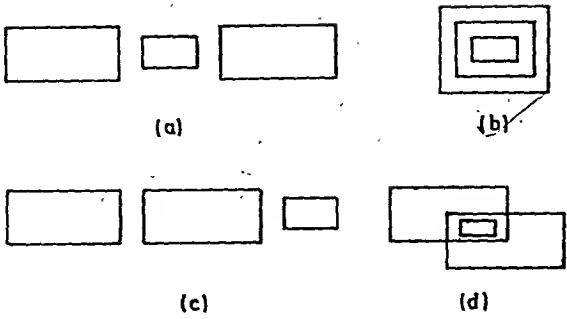
position of stage singers?

Answer: (d)

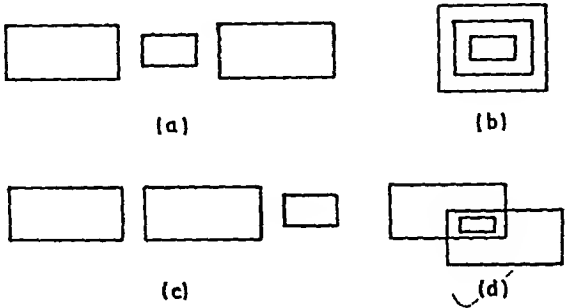
Explanation: Some TV singers can be Radio singers and some cannot. Stage singers can be both TV and Radio singers.

Exercise

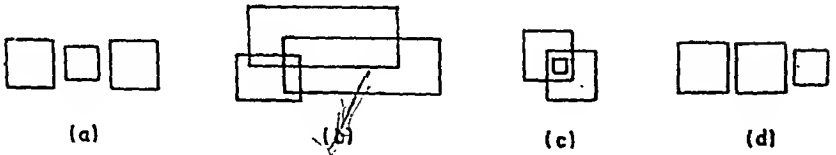
- Which combination of rectangles best represents the relationship between Tehsil, District and State? (See figure on the next page)
- If vehicles running on diesel and petrol are represented by two overlapping rectangles, which diagram will show correct position of petrol, diesel or both petrol and diesel? (See figure on the next page)
- Which of the following diagrams best depicts TV actors, radio actors and film directors? (See figure on the next page)



(Figure for Ques. 1)

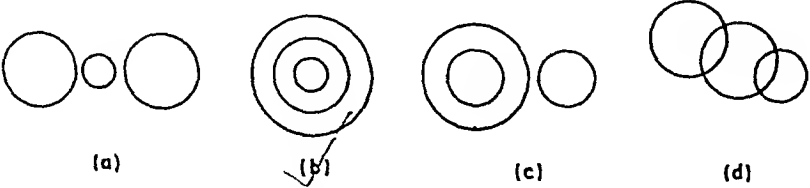


(Figure for Ques. 2)

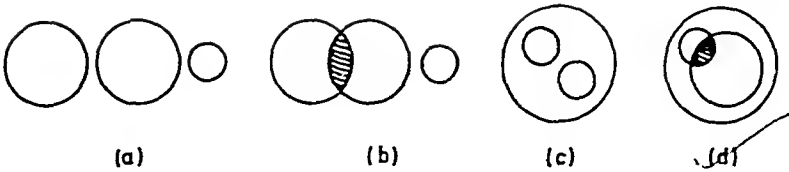


(Figure for Ques. 3)

4. Select the appropriate diagram representing Jama Masjid, Delhi and India?



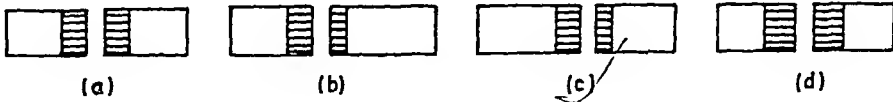
5. If Criminals, Hard-core criminals and Terrorists are be represented by diagrams, which of the following diagrams shows correct inter-relation?



Answers: 1.(b) 2.(d) 3.(b) 4.(b) 5.(d)

4.5 Type 5

Example In a certain town 60% of the population are Rotary Club members and remaining are the members of Lions Club. However, 10% members of both clubs are sleeping members. Which of the following diagrams best represents the situation? The shaded portion depict sleeping members.

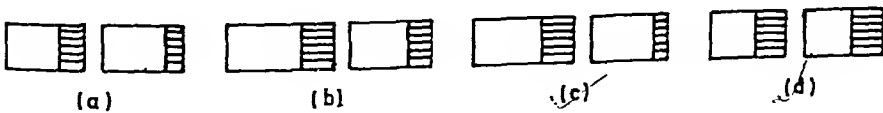


Answer: (c)

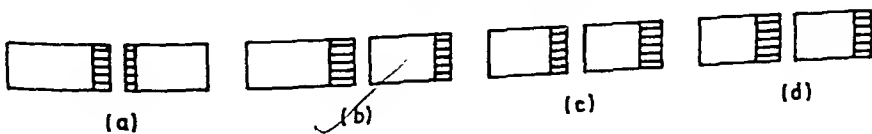
Since Rotary club has 60% membership, the large rectangle represents Rotary club members and smaller rectangle stands for Lions Club members. The shaded portions both in the larger rectangle and the small rectangle represent approximately 10% of the area of the rectangles.

Exercise

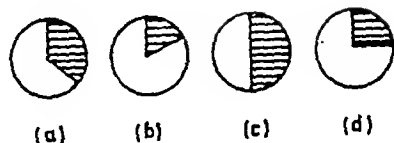
1. A company has two manufacturing units producing instant coffee. One unit produces twice as much as the Other, and half of each unit's output is exported to Russia. Which diagram depicts the situation most appropriately?



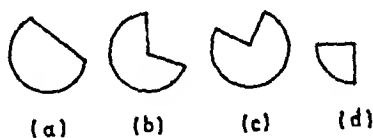
2. Machine 'A' produces 60% cloth and remaining is produced on machine 'B'. 25% of each machine's production is defective. Choose the diagram that best represents the situation. The shaded portion depicts defective cloth.



3. If 12% people in a village are suffering from cancer and 13% from blood-pressure, which of the following diagram best represents the sick population of the village.



4. In a village only one half of the population work in the field. Half of the people who do not work in fields are working in factories. Select the appropriate diagram best representing the situation.

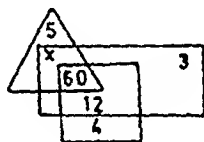


Answers: 1.(c) 2.(b) 3.(d) 4.(c)

4.6 Type 6

Example Study the following diagram and find out the value of 'x'?

- (a) 64 (b) 19
(c) 15 (d) 20



Answer: (c)

Explanation: Triangle, Rectangle and Square are given numbers 5, 3 and 4 respectively. The numbers given in the overlapped areas are obtained by multiplying these numbers. For instance 12 is the product of 3×4 because the corresponding area is overlapped by square (4) and rectangle (3). Similarly 60 is the product of $3 \times 4 \times 5$ where the area common to triangle (5), rectangle (3) and square (4). Naturally 'x' is in the area where triangle (3) is overlapped by rectangle (5) hence $5 \times 3 = 15 = (c)$.

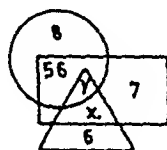
Figures in the overlapped areas could be obtained by any mathematical operation and a hit-and-trial method should be applied to find which operation has been used.

Exercise

1

1. $y = ?$

- (a) 42 (b) 420
(c) 48 (d) 336



2. $x = ?$

(a) 36

(b) 47

(c) 48

(d) 42

II

1. $x = ?$

(a) 38

(b) 35

(c) 48

(d) 45

2. $y = ?$

(a) 45

(b) 335

(c) 35

(d) 42

III

1. $a = ?$

(a) 140

(b) 145

(c) 135

(d) 130

2. $b = ?$

(a) 40

(b) 90

(c) 160

(d) 120

3. $a + b =$

(a) 75

(b) 50

(c) 140

(d) 260

IV

1. $b = ?$

(a) 20

(b) 22

(c) 15

(d) 8

2. $a = ?$

(a) 6

(b) 9

(c) 15

(d) 16

3. $a - c = ?$

(a) 3

(b) 7

(c) 10

(d) 9

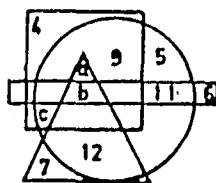
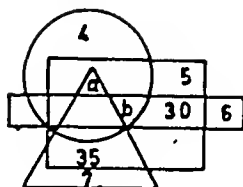
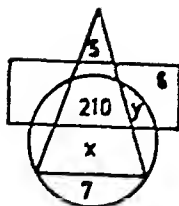
Answers

I 1.(d) 2.(d)

II 1.(b) 2.(d)

III 1.(a) 2.(d) 3.(d)

IV 1.(b) 2.(d) 3.(b)



Explanation

(a) In questions I, II and III, the figures in overlapped areas are obtained by multiplying the numbers allotted to various geometrical figures in the diagrams.

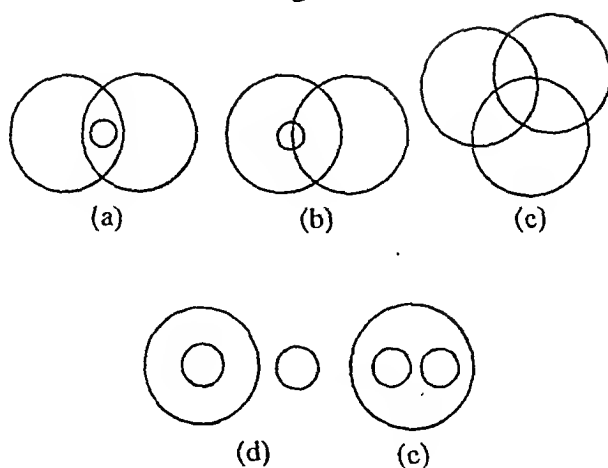
(b) In question IV, numbers in overlapped areas are obtained by adding up the numbers allotted to the square, rectangle, triangle and circle.

PRACTICE TESTS - LOGICAL DIAGRAMS

Questions 1-10

DIRECTIONS: Select the diagram that best represents the relation of terms given in questions 1-10:

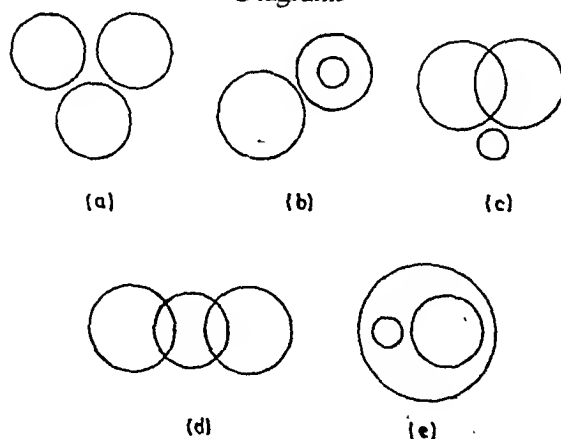
Diagrams



1. Animals, Cows, Dogs \subseteq
2. Cousins, Males, Nephews \cap
3. Women, Story teller, Liars \cap
4. Doctors, Surgeons, Musicians \cap
5. Students, Females, MBA entrance candidates \cap
6. Bedroom, Sitting room, Dwelling \subseteq
7. Civil engineers, Boiler engineers, Engineers \subseteq
8. People, Doctors, Cows \cap
9. Typewriter, Reading material, Magazines \cap
10. Policemen, Magistrates, Human beings \subseteq

Questions 11-20

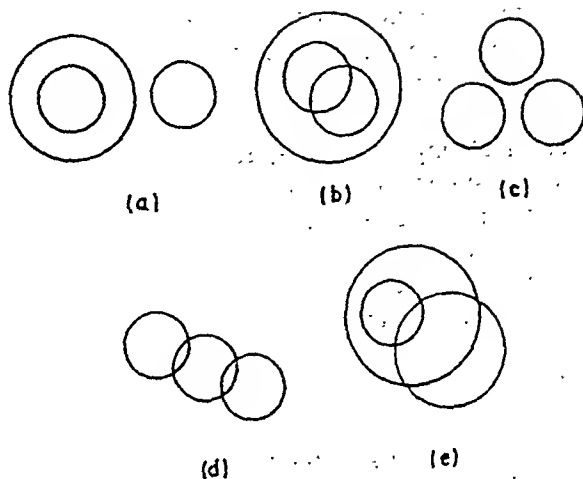
Diagrams



11. Professionals, Doctors, Engineers \subseteq
12. Smokers, Lawyers, Non-smokers \cap
13. Students, Children, Animals \cap
14. Vehicles, Trucks, Cars \subseteq

15. Fruits, Fish, Eatables *B*
 16. Pets, Dogs, Birds *C*
 17. Shirts, Bedsheets, Goldfish *A*
 18. Mammals, Cows, Crows *C*
 19. Surgeon, Forceps, Needles *D*
 20. Police officers, Females, Jeeps *C*

Questions 21-30

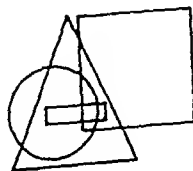


21. Mule, Father, Book *C*
 22. Family, Spouse, Husbands *B*
 23. Doctors, Human beings, Cows *A*
 24. Social workers, Alcoholics, Teetotallers *D*
 25. Females, Mothers, Nurses *E*
 26. Dogs, Rabbits, Rats *C*
 27. Females, Mothers, Sisters *E-B*
 28. Beef, Mutton, Eggs *C*
 29. Students, Married people, Human beings *D-B*
 30. Husbands, Brothers, Males *E*

Questions 31-34

DIRECTIONS: Study the following diagram carefully and answer the questions that follow:

- ☐ Government employees
☐ Urban people
☐ Graduates
☐ Teachers

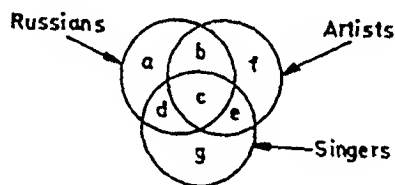


31. Which of the following statements is true?
 (a) all urbans are graduates
 (b) all graduates are urbans

- (c) all the urban government employees are graduates
 (d) all teachers are urban people
32. Choose the correct statement?
 (a) there are some urban teachers who are government employees as well as graduates
 (b) no teacher is a government employee
 (c) all graduates are government employees
 (d) all government employees are urban people
33. Mark the correct statement?
 (a) all nonurban teachers are government employees
 (b) all urban government employees are teachers
 (c) there are some nonurban graduates who are neither teachers nor government employees
 (d) all urban government employees are graduates
34. Which of the following statements is not true?
 (a) some government employees are rural
 (b) all teachers are urban
 (c) teachers who are government employees are urban
 (d) all govt. employees are urban people

Questions 35–38

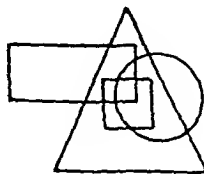
DIRECTIONS: In the following diagrams there are three intersecting circles each representing certain sections of people. Different regions are marked a-g. Read the statements in questions 35-38 and choose the letter of the region which correctly represents the statements?



35. Russians who are artists but not singers.
 (a) b (b) c (c) b (d) g
36. Artists who are neither Russians nor singers.
 (a) g (b) c (c) f (d) b
37. Russians who are singers but not artists.
 (a) a (b) b (c) c (d) d
38. Russians who are artists as well as singers.
 (a) a (b) b (c) c (d) d

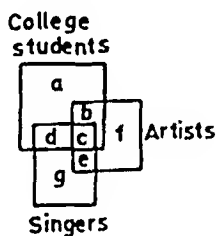
Questions 39–42

- ☐ Rural people
 Urban people
 Post graduates
 Professors



39. Which one of the following statements is true?
- all urbans are post graduates
 - all post graduates are urbans
 - all professors are urban people
 - all rural people are professors
40. Choose the correct statement?
- there are some professors who are rural people
 - no professor is urban
 - all post graduates are rural
 - all post graduates are urban
41. Which of the following statements is true?
- all rural people are professors
 - there are some rural people who are post graduates and professors
 - all rural people are post graduates
 - all professors are rural but not post graduates
42. Mark the correct statement
- all urban people are post graduates
 - all rural people are professors
 - some professors are rural but not urban
 - some urban people are not post graduates

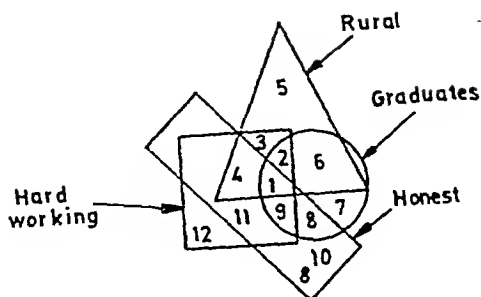
Questions 43–46



43. College students who are artists but not singers are represented by:
 (a) a (b) b (c) f (d) e
44. Artists who are neither college students nor singers are represented by?
 (a) b (b) e (c) c (d) f
45. College students who are singers but not artists are represented by?
 (a) a (b) b (c) d (d) c
46. College students who are artists as well as singers are represented by?
 (a) c (b) f (c) b (d) a

Questions 47–50 (See figure on the next page)

47. Graduates, hard-working and honest rural people are indicated by?
 (a) 1 (b) 2 (c) 3 (d) 4
48. Rural people who are hard-working and graduates but not honest are indicated by?
 (a) 1 (b) 2 (c) 3 (d) 4
49. Urban graduates who are neither hard-working nor honest are represented by?
 (a) 5 (b) 7 (c) 10 (d) 11



50. Rural graduates who are neither honest nor hard working are indicated by?
 (a) 2 (b) 4 (c) 6 (d) 9

Questions 51–60

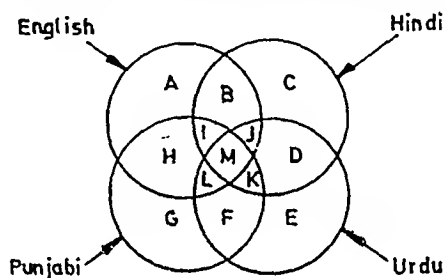
DIRECTIONS: There are four intersecting circles in the following diagram, each representing people who can read and write English, Hindi, Urdu and Punjabi.

$$A = 40$$

$$C = 2A$$

$$E = 1/2A$$

$$G = 2E$$



51. People who can read and write Hindi, Urdu and Punjabi are represented by?
 (a) A (b) D (c) K (d) E
52. People who can read and write all the languages can be represented by?
 (a) L (b) J (c) M (d) K
53. People who can read and write all the languages except Urdu are represented by?
 (a) K (b) M (c) B (d) I
54. People who cannot read and write English, Hindi and Punjabi are represented by?
 (a) L (b) K (c) C (d) E
55. People who cannot read and write Urdu and Punjabi, but are conversent with English and Hindi both, are represented by?
 (a) M (b) B (c) J (d) K
56. People who do not know English and Hindi but are familiar with Urdu and Punjabi both are represented by?
 (a) F (b) G (c) E (d) K
57. Which language is known by maximum number of people as per the above diagram?
 (a) Punjabi (b) English
 (c) Hindi (d) Urdu
58. How many people know only Urdu?
 (a) 40 (b) 10 (c) 20 (d) 60

59. How many people know Urdu or Punjab?

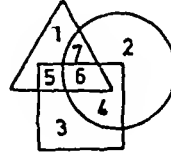
- (a) 40 (b) 20 (c) 80 (d) 60

60. How many people can read and write any one language excepting Punjabi?

- (a) 120 (b) 140 (c) 100 (d) 160

Questions 61-65

- △ Factory workers
 ○ Union members
 □ Hard-working workers



61. Among factory workers, hard-working workers who are members of the Union are indicated by?

- (a) 5 (b) 4 (c) 3 (d) 6

62. Union members who are employed in factories and are not hard-working are indicated by?

- (a) 6 (b) 5 (c) 4 (d) 7

63. Factory workers who are neither hard-working nor members of the Union are indicated by?

- (a) 3 (b) 2 (c) 1 (d) 7

64. There are hard-working workers who are members of the Union but not working in factories. Which number indicate this section of workers in the above diagram?

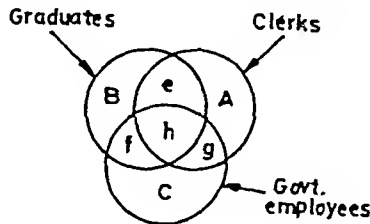
- (a) 3 (b) 2 (c) 1 (d) 4

65. Factory workers who are hard-working but not members of the Union are indicated by?

- (a) 3 (b) 2 (c) 5 (d) 6

Questions 66-70

DIRECTIONS: Three circles representing GRADUATES, CLERKS and GOVERNMENT EMPLOYEES are intersecting one another. The intersecting one another. The intersections are marked A,B,C,e,f,g, and h. Which part best represents the statements in questions 66-70?



66. Some clerks are graduates

- (a) e (b) h (c) g (d) f

67. Some clerks are government employees

- (a) e (b) h (c) g (d) f

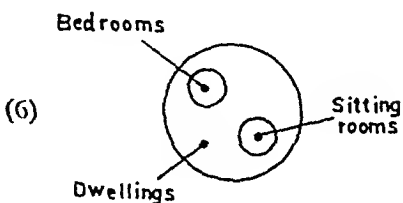
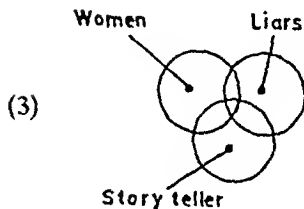
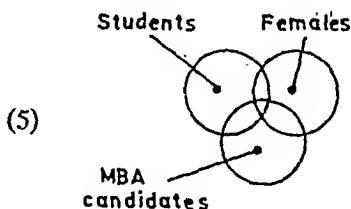
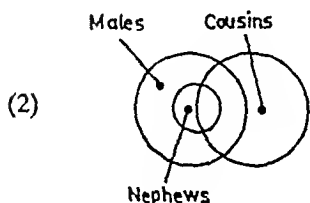
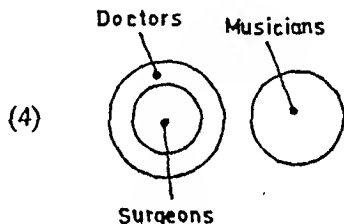
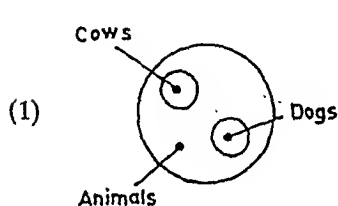
68. Some graduates are government employees but not as clerks
(a) h (b) g (c) f (d) e
69. Clerks who are graduates as well as in government service
(a) e (b) f (c) g (d) h
70. Some graduates are clerks not working in government departments
(a) f (b) g (c) h (d) e

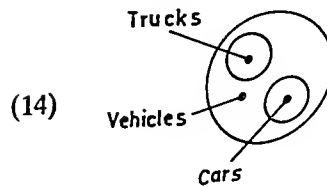
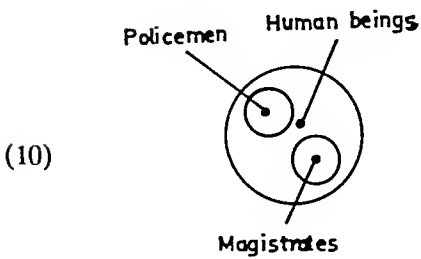
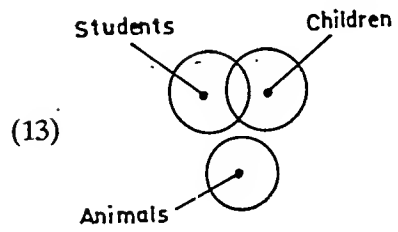
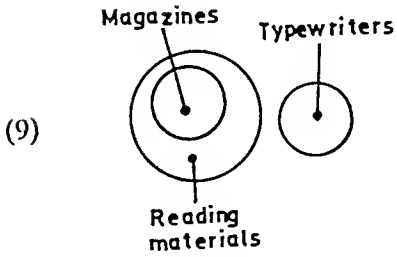
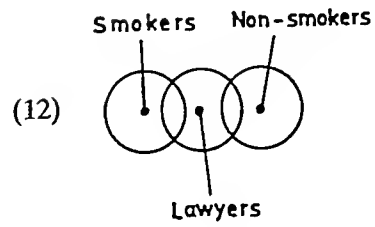
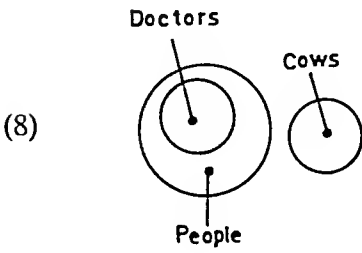
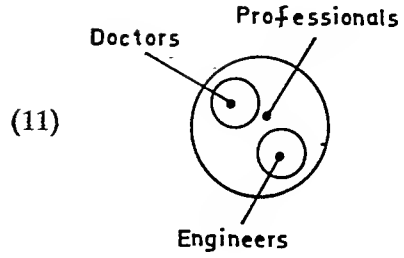
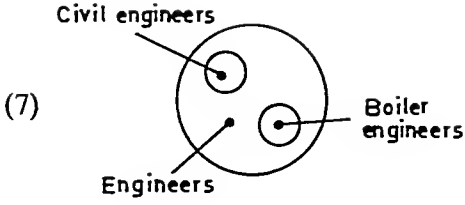
Answer Key Practice Tests

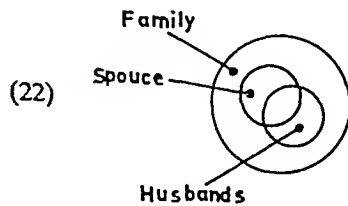
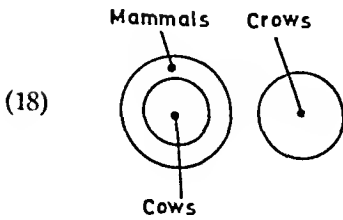
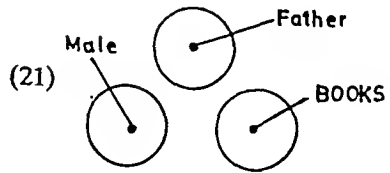
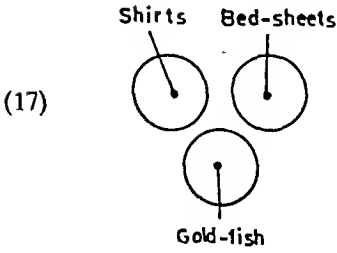
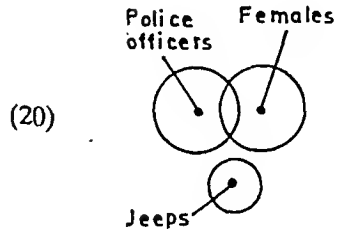
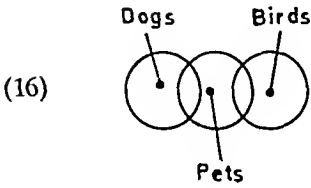
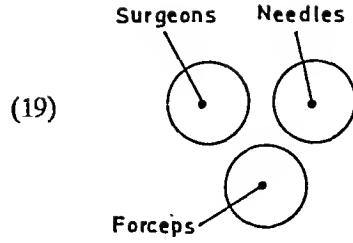
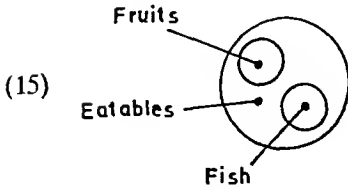
- 1.(c) 2.(b) 3.(c) 4.(d) 5.(c) 6.(e) 7.(e) 8.(d) 9.(d) 10.(e) 11.(e)
 12.(d) 13.(c) 14.(e) 15.(e) 16.(d) 17.(a) 18.(b) 19.(a) 20.(c) 21.(c) 22.(b)
 23.(a) 24.(d) 25.(e) 26.(c) 27.(b) 28.(c) 29.(b) 30.(b) 31.(d) 32.(a) 33.(c)
 34.(d) 35.(c) 36.(c) 37.(d) 38.(c) 39.(c) 40.(a) 41.(b) 42.(d) 43.(b) 44.(d)
 45.(c) 46.(a) 47.(a) 48.(b) 49.(b) 50.(c) 51.(c) 52.(c) 53.(d) 54.(d) 55.(b)
 56.(a) 57.(c) 58.(c) 59.(d) 60.(b) 61.(d) 62.(d) 63.(c) 64.(d) 65.(c) 66.(a)
 67.(c) 68.(c) 69.(d) 70.(d)

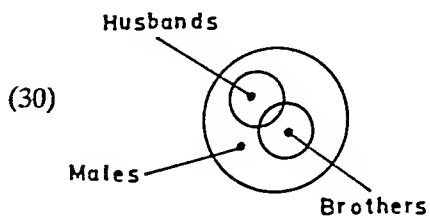
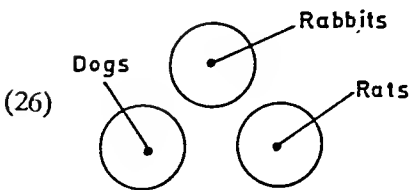
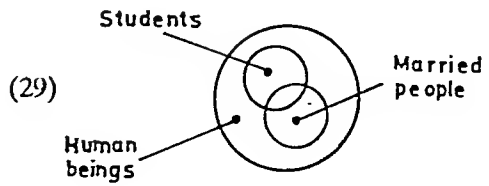
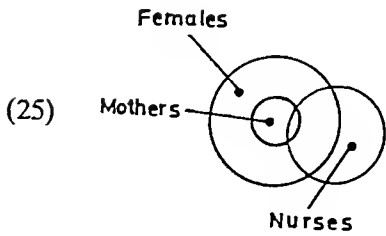
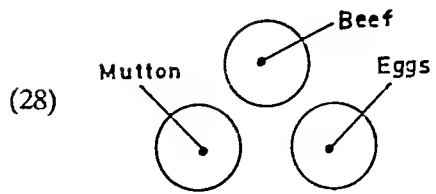
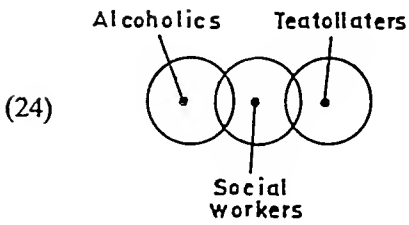
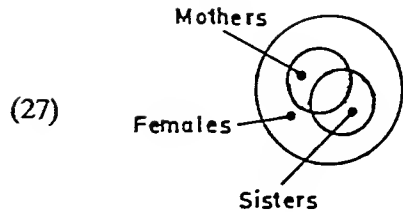
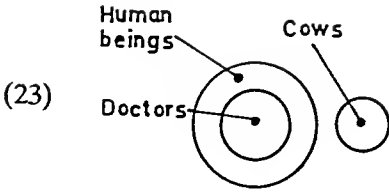
Explanation

For questions 1-30, study the following explanatory diagrams:









Section Five

ANALYTICAL REASONING TESTS

In analytical reasoning (AR) tests, you are required to arrange the scattered information given in the outline portion of the question. The outline is that part of the AR test which describes a certain situation in the form of a small passage or numbered statements. The outline information is generally presented first and then some questions are given which are to be answered by drawing inferences from the outline.

To tackle such questions you have to first arrange the information in a proper order or sequence. In some cases it helps to quickly draw a diagram depicting the information given in the outline. Some of most commonly found AR questions along with working exercises are given in this section.

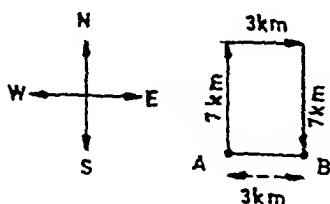
5.1 Directional Tests

Example Shyam travels 7 km to the north. Then again he turns to the right and walks 3 km. Then again he turns to his right and moves 7 km forward. How many kilometers away is he from the starting point?

- (a) 10 km (b) 20 km
(c) 13 km (d) 6 km
(e) 3 km

Answer : (e)

Explanation: You have to keep in mind the directions and turns given in the question and the distances covered. The situation should be quickly sketched as follows:



A = Starting point
B = Finishing point
Distance between A and B
= 3 km

Exercise

1. Rita drives to the north of her place of stay at *A* and after travelling 25 km finds that she has driven in the wrong direction. She then turns to her right and travels 2 km and then she again turns to the right and drives straight another 25 km. How much distance has she now to cover to go back to the starting point?

- (a) 25 km
(b) 2 km
(c) 4 km
(d) 40 km
(e) 27 km

2. Rana travels 10 km to the north, turns left and travels 4 km and then again turns right and covers another 5 km and then turns right and travels another 4 km. How far is he from the right starting point?

- (a) 15 km
(b) 4 km
(c) 5 km
(d) 10 km
(e) 20 km

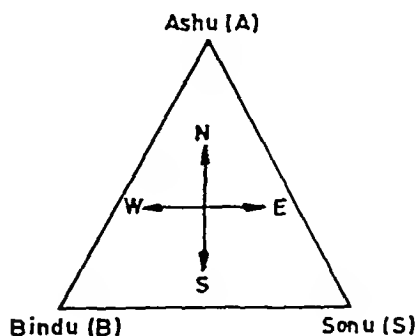
3. A taxi driver commenced his journey from a point and drove 10 km towards north and turned to his left and drove another 5 km. After waiting to meet a friend here, he turned to his right and continued to drive another 10 km. He has covered a distance of 25 km so far, but in which direction would he be now?

- (a) North
(b) East
(c) South
(d) West
(e) South-east

4. A tourist drives 10 km towards east and turns to the right hand and drives 3 km. Then he drives towards west (turning to his right) 3 km. He then turns to his left and drives 2 km. Finally he turns to his right and travels 7 km. How far is he from his starting point and in which direction would he be?

- (a) 10 km, East
(b) 9 km, North
(c) 8 km, West
(d) 5 km, West
(e) 3 km, South

5. Ashu, Bindu and Sonu are standing at the corners of an equilateral triangle drawn in an open farm. Study the questions given below which are based on the following diagram and answer them by marking the appropriate choice from the choices a-e:



(i) From the positions shown in the Figure 1, Ashu, Bindu and Sonu run along the sides in clockwise direction and stop after covering $1\frac{1}{2}$ sides. Now which of the following statements is true?

- (a) Bindu is to the west of Sonu
(b) Ashu is to the south-west of Bindu

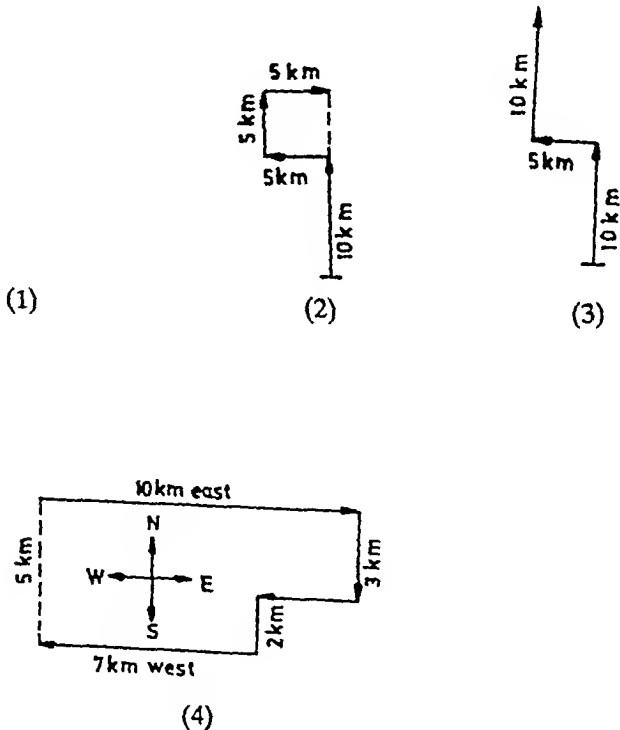
- (c) Ashu is to the south-west of Sonu ✓
- (d) Bindu is to the north-west of Ashu ✓
- (e) Sonu is to the north-east of Ashu

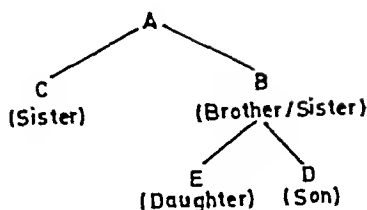
(ii) From the positions mentioned in 5.(i) above, if all of them run in the anti-clockwise direction covering two sides and then stop, which of the following statements is correct?

- (a) Bindu is to the north of Sonu ✓
- (b) Ashu is to the south of Bindu ✓
- (c) Ashu is to the east of Sonu ↑
- (d) Bindu is to the north-west of Sonu ✓
- (e) Bindu is to the south of Sonu ✓

Answers: 1.(b) 2.(a) 3.(a) 4.(d) 5(i).(b) 5.(ii).(e)

Explanation: Answers will be obvious by making diagrams of the situations as follows:





Note: Diagram here has been drawn for illustration purposes but you should roughly draw the diagram arranging the information step by step.

Exercise

1. Sita and Mona are Narain's wives, Bindu is Mona's step-daughter. How is Sita related to Bindu?

- (a) Sister (b) Mother-in-law
(c) Mother (d) None of these

2. The Sharmas have three children Sunita, Sanjay and Sheela. Sunita is married to Sonil Mahajan and they have a son Shoban. Sheela marries Sanjay Bhandari and Vinit and Lily are their children. Sanjay (Sunita's brother) is younger to Sunita but elder to Sheela.

(i) What is the surname of Shoban?

- (a) Bhandari (b) Sharma
(c) Mahajan (d) none of these

(ii) What is surname of Vinit?

- (a) Mahajan (b) Bhandari
(c) Sharma (d) none of these

(iii) How is Shoban related to Sanjay Sharma?

- (a) Son (b) Nephew
(c) Brother (d) Uncle

3. Amit is son of Rahul. Sarika, Rahul's sister has a son Sonu and a daughter Rita. Raja is the maternal uncle of Sonu.

(i) How is Amit related to Sonu?

- (a) Nephew (b) Cousin (brother)
(c) Uncle (d) None of these

(ii) How is Rita related to Raja?

- (a) Sister (b) Daughter
(c) Niece (d) None of these

(iii) How many nephews does Raja have?

- (a) 1 (b) 2
(c) 3 (d) 0

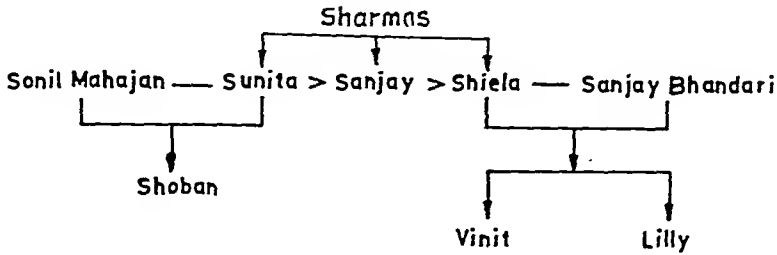
(iv) What is relationship of Raja with Rita?

- (a) Uncle (b) Brother
(c) Maternal uncle (d) Nephew

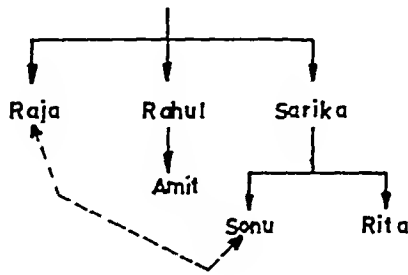
Answers: 1.(c) 2(i).(c) 2(ii)(b) 2(iii)(b) 3.(i)(b) 3(ii)(c) 3(iii)(b) 3(iv)(c)

Explanation: The following diagrams will make the situation clear:

For Q. 2(i) to 2.(ii)



For Q.3(i) to 3.(iv)



5.3 Symmetrical Relationship Tests

Example

DIRECTIONS:

- (a) A is richer than B
- (b) C is richer than A
- (c) D is richer than C
- (d) E is the richest of all

E D C A B

If they are made to sit in the above degree of richness who will have the medial position (central position):

- (a) A (b) B (c) C (d) D (e) E

Answer: (c)

Explanation: E is the richest of all. Therefore, he is richer than D. Denote the above relationship by following diagram:

E > D > C > A > B

> denote richer than

Exercise

1. (a) Radha is younger to Sunita but elder than Rita

(b) Rita is elder than Geeta

(c) Sham is elder to Rita but younger to Radha

Who is the youngest of all?

- (a) Rita (b) Sham
- (c) Sunita (d) Geeta
- (e) Radha

2. (a) Lata is a year older than Sunita
 (b) Sunita is two years older than Bindu
 (c) Rajan is a year older than Bindu
 Who is the youngest of all?
 (a) Sunita (b) Lata
 ✓ (c) Bindu (d) Rajan
 (e) cannot be ascertained
3. (a) A and B play Football and Hockey
 (b) C and D play Badminton and Cricket
 (c) B and C play Cricket and Football
 (d) A and D play Hockey and Badminton
 (i) One who plays Badminton, Football and Hockey
 (a) A (b) B
 ✓ (c) C (d) D
 (e) None
 (ii) One who plays Badminton, Football and Cricket
 (a) A (b) B
 ✓ (c) C (d) D
 (e) None
 (iii) One who plays Cricket, Football and Hockey
 (a) A ✓ (b) B
 (c) C (d) D
 (e) None
 (iv) One who does not play cricket
 ✓ (a) A (b) B
 (c) C (d) D
 (e) None

Answers: 1.(d) 2.(c) 3(i).(a) 3(ii).(c) 3(iii).(b) 3(iv).(a)

Explanation

1. Sunita > Radha > Sham > Rita > Geeta

2.	(a)	(b)	(c)
	Lata		
	Sunita	Sunita	
			Rajan
		Bindu	Bindu

= Lata > Sunita > Rajan > Bindu

3. (i) Football = A, B, C
 (ii) Hockey = A, B, D
 (iii) Badminton = C, D, A
 (iv) Cricket = C, D, B

5.4 Arranging Letters/Numbers

Example 1

DIRECTIONS: If the word 'DISINTERESTEDNESS' is re-written by reversing the order of first seven and last six letter, then,

1. If all vowels are removed, which letter will have one preceding and one following

letter in the same order as in the English alphabet?

- (a) T (b) D
(c) N (d) R
(e) S
2. Which letter will be the tenth letter towards right?
(a) R (b) E
(c) T (d) S
(e) R
3. Which will be the sixth letter from end towards left?
(a) R (b) E
(c) S (d) N
(e) T
4. Which consonant will be exactly in the middle?
(a) T (b) E
(c) S (d) R
(e) None
5. How many vowels are there to the left of the letter exactly in the middle?
(a) 1 (b) 2
(c) 3 (d) 4
(e) None

Answers: 1.(e) 2.(d) 3.(c) 4.(e) 5.(c)

Explanation: By re-writing the above word as per instructions in the question, the answers will be obvious, i.e.,

'ETNISIDRESTSENDE'

Example 2

a b c d e g h i j k l
m n o p q r t s u v w x y z

1. Which letter is missing in the above set of letters?
(a) j (b) y
(c) f (d) v
(e) None
2. Which letter is out of its normal position?
(a) t (b) j
(c) d (d) s
(e) r
3. How many vowels are there?
(a) 6 (b) 4
(c) 5 (d) 7
(e) 8
4. Which two letters are sandwiched between two vowels?
(a) vw (b) hj
(c) gh (d) pq
(e) np

Answers : 1.(c) 2.(a) 3.(c) 4.(c)

Example 3

6 9 6 9 9 6 6 7 6 9 7 9 6 6 9 7 7 9 6 6 7

1. How many 9's are sandwiched between 6 and 7?
(a) 2 (b) 3

- ☒ (c) 4 (d) 1
☐ (e) None
2. How many 6's are sandwiched between 9's?
- ☐ (a) 1 (b) 2
☒ (c) 3 (d) 4
☐ (e) None
3. How many 7's have a 6 before and after?
- ☒ (a) 1 (b) 2
☐ (c) 3 (d) 4
☐ (e) None

Answers : 1.(c) 2.(c) 3.(a)

Exercise

DIRECTIONS: If the first three letters of the word 'COMPREHENSION' are reversed, then last three letters are added and then the remaining letters are reversed and added, then,

1. Which letter will be exactly in the middle?
- ☐ (a) H (b) R
☒ (c) S (d) N
☐ (e) None
2. Which letter will be fifth from the end?
- ☐ (a) S (b) R
☐ (c) N ☒ (d) E
☐ (e) I

DIRECTIONS: If first six letters of the word 'THOUGHTFULNESS' are reversed, next six letters are written as they are and then the remaining letters are reversed,

3. Which letter will be exactly in the middle?
- ☐ (a) F ☒ (b) U
☐ (c) L (d) T
☐ (e) None
4. Which two letters will be sandwiched between double T and double L?
- ☐ (a) NS (b) FE
☒ (c) FU (d) HT
☐ (e) None
5. If all vowels are removed which letter will be exactly in the middle?
- ☐ (a) T (b) L
☐ (c) F (d) H
☐ (e) None

DIRECTIONS: If the first four letters of a foreign term 'HIPNOWADIASM' are written in reverse order, next five letters are written without changing their order and then the remaining letters are again written in reverse order, then:

6. Which letter will be exactly in the middle?
- ☐ (a) O (b) I
☐ (c) A (d) D
☒ (e) W
7. Which letter will be sandwiched between two vowels?
- ☐ (a) S (b) O

(c) D

(d) W

(e) N

8. Which letter will be preceding two adjoining vowels?

(a) N

(b) O

(c) D

(d) M

☒ (e) S

9. How many vowels are to the left of W?

(a) 1

☒ (b) 2

(c) 3

(d) 4

(e) 0

DIRECTIONS: Questions 10 to 12 are based on the following sequence of letters:

*m n m n n m m n m n m n m u u m n m n n m m m n*10. How many *m*'s are preceded by *n* and followed by *m*?

(a) 1

(b) 2

☒ (c) 3

(d) 4

(e) none

11. How many *n*'s are preceded and followed by *n*?

(a) 1

(b) 2

☒ (c) none

(d) 3

(e) 5

12. How many *m*'s are preceded and followed by *m*?☒ (a) 1☒ (b) 2

(c) none

(d) 3

(e) 4

DIRECTIONS: Answer questions 13 to 14 based on the following sequence of letters:

a b c d e f g h i l k j m n o r q s t u u v w x y z

13. Which letters are wrongly placed?

(a) *π/lj*(b) *vu/jl*(c) *m/lj*☒ (d) *jl/rq*(e) *kq/rq*

14. How many letters are missing and how many repeated?

(a) None

☒ (b) 3☒ (c) 2

(d) 3

(e) 5

DIRECTIONS: Questions 15 to 20 are based on the following sequence of numbers:

8 9 6 7 3 9 3 7 8 3 9 9 5 6 3 9 6 9 3 8

15. How many 9's are there which are preceded by 3 but not immediately followed by 9 in the above set of numbers?

(a) 1

(b) 4

(c) 5

(d) 2

☒ (e) 3

16. Which digit has least frequency in the above set of figures?

(a) 8

(b) 9

☒ (c) 5

(d) 6

(e) 3

17. Which digit has the highest frequency leaving digit 9 in the above set of numbers?

- (a) 8 (b) 7
 (c) 5 (d) 3
 (e) None
18. There are pairs of adjoining figures which add up to 12. How many such pairs are there?
 (a) 1 (b) 2
 (c) 3 (d) 6
 (e) None
19. How many 3's are there not preceded by 9 but immediately followed by 9?
 (a) 2 (b) 3
 (c) 4 (d) 5
 (e) 1
20. Which digit is exactly in the middle in the above set of numbers?
 (a) 8 (b) 3
 (c) 9 (d) 5
 (e) None

Answers and explanations

- 1.(c) MOCIONSNEHERP
 2.(d) MOCIONSNEHERP
 3.(b) HGUOHTTFULESSSENS
 4.(c) HGUOHTTFULESSSENS
 5.(e) HGHTTFLSSNS
 6.(e) HIPPNOWADIASM
 7.(d) OWA
 8.(c) SAI
 9.(b) O and I
 10.(c)
 11.(c)
 12.(b)

13.(d) Letter j is in place of l and vice versa. Similarly letter r is in place of q and vice versa.

14.(c) Letter p is missing and letter u is repeated. Hence one letter is missing and one letter repeated.

15.(c)

16.(c)

17.(d)

18.(d) $393 = 2 \text{ pairs}$

$939 = 2 \text{ pairs}$

4 pairs

 $+ 2 \text{ pairs}$

 6 pairs

19.(b)

20.(c)

(c) 80 km

(d) 40 km

(e) 75 km

DIRECTIONS: Ashok Mehta has three children Usha, Ramchander and Sunil. Sunil married Rita, the eldest daughter of Mr and Mrs Mathur. The Mathurs married their youngest daughter to the eldest son of Mr and Mrs Saxena, and they had two children named Sanjay and Sunita. The Mathurs have two more children, Rakesh and Bindu, both elder to Shanti. Sonu and Surinder are sons of Sunil and Rita. Lata is the daughter of Sanjay.

6. What is the surname of Lata?

(a) Saxena

(b) Mathur

(c) Sanjay

(d) Mehta

(e) None of these

7. How is Sonu related to the father of Rita?

(a) grandson

(b) son-in-law

(c) son

(d) cousin

(e) none of these

8. What is the surname of Sonu?

(a) Saxena

(b) Mathur

(c) Mehta

(d) Sunil

(e) cannot be ascertained from the data

9. How is Mrs Mathur related to Sunil?

(a) aunt

(b) mother-in-law

(c) mother

(d) sister-in-law

(e) none of these

DIRECTIONS: Mr and Mrs Sharma have two children Asha and Shashi. Shashi married Radha, daughter of Mrs Mahajan. Suresh, son of Mrs Mahajan marries Rita. Sonu and Rocky are born to Suresh and Rita. Uma and Sudha are the daughters of Shashi and Radha.

10. What is the surname of Sonu?

(a) Mahajan

(b) Sharma

(c) Shashi

(d) None of these

11. How is Suresh related to Sudha?

(a) brother

(b) maternal uncle

(c) uncle

(d) cousin

12. What is Sudha's relation to Asha?

(a) sister

(b) niece

(c) aunt

(d) daughter

13. How is Sonu related to Mr Mahajan?

(a) son-in-law

(b) grandson

(c) son

(d) none of these

DIRECTIONS: Asha and Dara are the children of Mr Dass. Asha marries Suresh Chopra and Sunil, Sanjay and Sonu are born to them. Sunil is married to the eldest daughter of Mr and Mrs Roy. Bindu is younger to Rita and older than Sita and all are daughters of Mr and Mrs Roy. Gita is Sunil's daughter.

14. What is surname of Sanjay?

(a) Dass

(b) Roy

(c) Chopra

(d) None of these

15. Who is married to Sunil?

- (a) Bindu (b) Sita
(c) Rita (d) none of these
16. How is Dara related to Sonu?
(a) brother-in-law (b) uncle
(c) maternal uncle (d) brother
17. What is the surname of Gita?
(a) Chopra (b) Dass
(c) Roy (d) Suresh

DIRECTIONS: From the set of figures given below, answer the questions 18 to 22,
6 6 9 6 9 9 9 6 6 6 9 6 9 6 6 9 9 6 6 9 9 6 6 6

18. How many 9's are followed by 6 as well as preceded by 6?
(a) 5 (b) 4
(c) 3 (d) 7
(e) none
19. How many 9's are followed by 6?
(a) 3 (b) 4
(c) 6 (d) 8
(e) 2
20. How many's 6's are followed by 9's as well as preceded by 9's?
(a) 3 (b) 2
(c) 4 (d) 1
(e) all
21. What is the total of 6's?
(a) 30 (b) 42
(c) 48 (d) 84
(e) 36
22. If the sum of all 6's is subtracted from the sum of all 9's, what figure will you get?
(a) 9 (b) 6
(c) 18 (d) 27
(e) 30

DIRECTIONS: Questions 23 to 27 are based on the following set of figures:
7 8 9 7 6 5 3 4 2 8 9 7 2 4 5 9 2 9 7 6 4 7

23. How many 7's are preceded by 9 and followed by 6?
(a) 3 (b) 2
(c) 4 (d) 5
(e) all
24. Which figure is missing?
(a) 6 (b) 10
(c) 1 (d) 2
(e) none
25. Which figure has highest frequency?
(a) 7 (b) 9
(c) 6 (d) 0
(e) all except 0
26. Which figures have equal frequency?
(a) 2 5 3 (b) 8 6 5
(c) 2 4 5 (d) 3 7 5
(e) none of these

27. Which figure has the lowest frequency?

- | | |
|-------|-------|
| (a) 2 | (b) 8 |
| (c) 3 | (d) 4 |
| (e) 9 | |

28. If the first three letters of the word 'ANTHROPOLOGISTS' are written in reverse order, followed by the next four letters written in reverse order, followed by next eight letters written in reverse order, which letter will come exactly in the middle?

- | | |
|-------|-------|
| (a) T | (b) H |
| (c) S | (d) O |
| (e) R | |

DIRECTIONS (For Questions 29 to 33): A company wants to select a team of four mechanical engineers from its South Indian Factory for transfer to North India where they are going to set up a new plant. The company is managed by professional managers and is very particular about human resources and industrial relations. There are seven engineers of equal ability; *X, Y, and Z* (who are in Senior Executive cadre), and *A, B, C and D* (who are in Junior Executive cadre). The company requires that there should be two Senior Executives and two Junior Executives in each team. It is also necessary that all of the engineers in a particular team are friendly with each other in order to have a real team spirit and avoid any industrial relations problem in the new factory being set up in the North. Following is the situation of relations between the seven engineers:

I. *Y* and *A* are not friendly

II. *Z* and *C* are not friendly

III. *A* and *B* are not friendly

29. If *B* is selected and *Y* is rejected, the team will consist of:

- (a) *X, Z, A* and *B*
 (b) *X, Z, D* and *B*
 (c) *X, Z, C* and *B*
 (d) *Z, C, D* and *B*

30. If *A* is on the team, then which other engineers must be on the team as well?

- | | |
|------------------------------|------------------------------|
| (a) <i>X, Y</i> and <i>D</i> | (b) <i>X, Z</i> and <i>D</i> |
| (c) <i>X, Z</i> and <i>B</i> | (d) <i>X, Z</i> and <i>C</i> |
| (e) <i>C, Z</i> and <i>D</i> | |

31. If both *Y* and *Z* are selected, which of the other engineers must be on the team with them?

- | | |
|--------------------------------|--------------------------------|
| (a) Both <i>C</i> and <i>D</i> | (b) Only <i>D</i> |
| (c) Both <i>B</i> and <i>A</i> | (d) Both <i>B</i> and <i>D</i> |
| (e) Only <i>C</i> | |

32. Which statement(s) must be false?

- I. *Y* and *C* are never selected together
 II. *Z* and *B* are never selected together
 III. *Z* and *D* are never selected together

- (a) I only
 (b) II only
 (c) III only
 (d) I and III only
 (e) I, II and III

33. Which of the following statements are true for X ?

I. X must be selected as one of the Senior Executives on the team

II. X must be selected, if C is selected.

III. X cannot be selected, if both A and C are rejected.

(a) I only

(b) II only

(c) III only

(d) I and III only

(e) I, II and III

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DIRECTIONS (34 to 39): A goldsmith has five gold rings, each having a different weight:

Statement 1 Ring D is weighing twice as much as ring E .

Statement 2 Ring E is weighing four and one-half times as much as ring F .

Statement 3 Ring F is weighing half as much as ring G .

Statement 4 Ring G is weighing half as much as ring H .

Statement 5 Ring H is weighing less than ring D but more than ring F .

Based on the above statements, answer the following questions:

34. Which of the following represents the descending order of weights of the rings?

(a) D, E, G, H and F

(b) E, G, H, D and F

(c) H, F, G, D and E

(d) F, D, G, E and H

(e) D, E, H, G and F

35. Which of the numbered statements above is not necessary to determine the correct order of the rings according to their weights?

(a) Statement 1

(b) Statement 4

(c) Statement 3

(d) Statement 2

(e) Statement 5

36. Which of the following is the lightest in weight?

(a) Ring D

(b) Ring E

(c) Ring F

(d) Ring G

(e) Ring H

37. If these rings are sold according to their weights as it is, which ring will fetch highest value in rupees?

(a) G

(b) H

(c) F

(d) D

(e) E

38. Ring H is heavier than which of the following two rings?

(a) GE

(b) GF

(c) DF

(d) DE

(e) EG

39. Ring H is lighter in weight than which of the other two rings?

(a) GF

(b) DE

(c) DF

(d) GE

(e) EG

DIRECTIONS: For questions 40 to 45

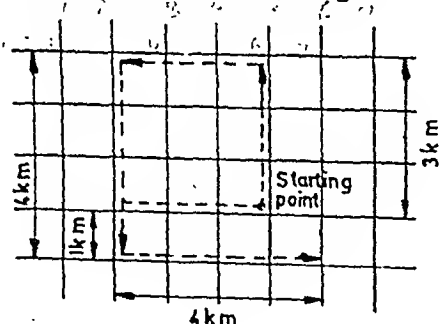
Some friends are sitting on a bench. ;Sunil is sitting next to Sunita and Sanjay is next to Bindu. Bindu is not sitting with Sumit. Sumit is on the left end of the bench and Sanjay is on second position from right hand side. Sunil is on the right side of Sunita and to the right side of Sumit. Sunil and Sanjay are sitting together.

Based on the above seating arrangements, answer the following questions:

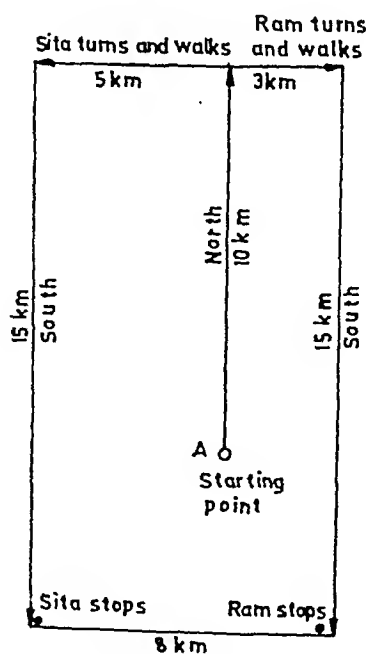
40. Sunil is sitting between
 (a) Sunita and Bindu (b) Sumit and Bindu
 (c) Sunita and Sanjay (d) Sanjay and Sumit
 (e) Bindu and Sanjay
41. Who is sitting in the centre?
 (a) Sumit (b) Sunil
 (c) Bindu (d) Sanjay
 (e) Sunita
42. Sanjay is sitting between
 (a) Bindu and Sunita (b) Sunil and Sumit
 (c) Sunita and Bindu (d) Sumit and Bindu
 (e) Sunil and Bindu
43. Sumit is sitting on the
 (a) second place from right (b) second place from left
 (c) extreme left (d) extreme right
 (e) in the middle of all
44. Bindu is sitting on the
 (a) extreme left side (b) extreme right side
 (c) second from left side (d) third from left side
 (e) in the centre
45. Sunita is sitting away from Bindu _____ places
 (a) 1 (b) 2
 (c) 4 (d) 5
 (e) 3

Answers With Explanations

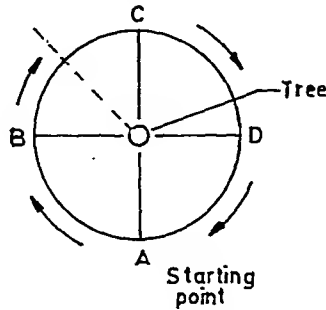
1.(b) The situation can be diagrammed as follows:



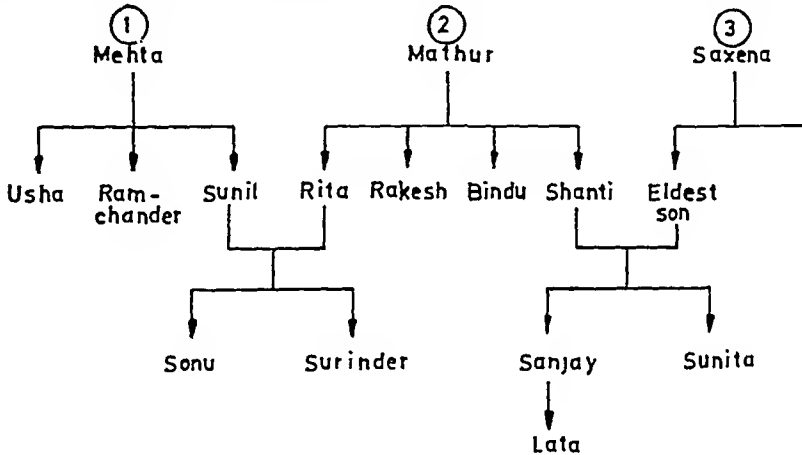
From the diagram it is evident that to reach the starting point, Raman has to go back 1 km to north because he has travelled 4 km to south and his journey south to north (starting journey) was only 3 km. So the difference $4 - 3 = 1$ km. And then 3 km to east. Statement II is therefore, the correct route to reach the starting point.



- 2.(c) By driving 4 km east and 1 km north, he is 1 km away from his starting point.
 3.(c) By sketching a diagram of the situation the answer will be evident.
 4.(b) Serially number each direction in the diagram.
 5.(a) Situation can be diagrammed as follows.



- 6.(a) By drawing the family organisation chart, the situation will be clear:

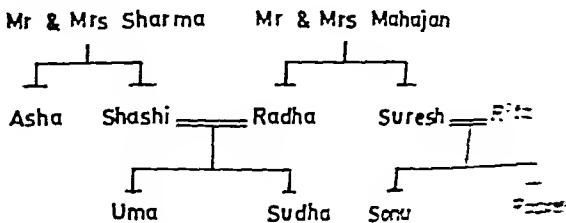


- 7.(a) Sonu is the son of Sunil and Rita. Rita is the Mathur's daughter. Therefore Sonu is the grandson of Rita's father.

- 8.(c) Saxena Since Lata is the daughter of Sanjay who belongs to Saxena family.

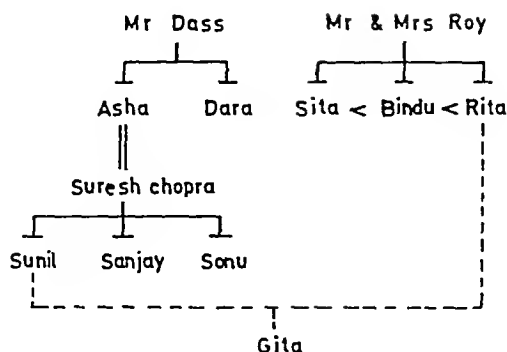
- 9.(b) Sunil is married to the daughter of Mathurs.

For Questions 10 to 13, draw the family organisation chart based on the information given in the directions:



10. (a) 11. (b) 12. (c) 13. (b)

For Questions 14 to 17, draw the family organisation chart based on the information given in the directions:



< Sign denotes younger to.

14.(c) 15.(c) 16.(c) 17.(a) 18.(c) 19.(c) 20.(b)

21.(d) 22.(b) 23.(b) 24.(c) 25.(a) 26.(b) 27.(c)

28.(c) TNA PORH STSIGOLO

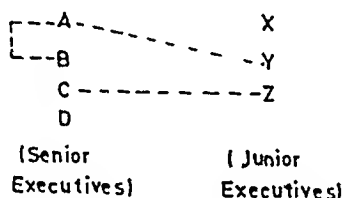
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4

8

Questions 29 to 33

Make a sketch of the situation as follows based on the various statements given in the beginning of the questions:



The connecting line in the above diagram indicates unfriendly relations:

29.(B) If Y is rejected, then X and Z (the only two remaining Sr. Executives) who must be in the team. The selection of Z eliminates C, leaving D. Hence A must work with X, Z and D.

30.(B) A's selection eliminates B and Y. This leaves only X and Z, the Sr. Executives who must be in the team. The selection of Z eliminates C, leaving D. Hence A must work with X, Z and D.

31.(D) Out of 4 Jr Executives, who could make up the other half of the team, A is eliminated by the selection of Y, and C is eliminated by the selection of Z. That leaves only B and D, Junior executives to make up the team.

32.(E) X, Y, C and D is a possible combination which includes Y and C. Second possible team is X, Z, B and D which includes Z, B and Z, D.

33.(B) X need not be selected because Y, Z, B, D is one of the possible combinations of two senior and two junior executive engineers. If C is selected, Z is eliminated, which makes selection of Y and X compulsory. Hence selection of X is a must. X can be selected if both A and C are rejected since X, Z, B and D is

one of the possible combinations.

34.(E) 35.(E) 36.(C) 37.(D) 38.(B) 39B)

Explanation: For Questions 34 to 39.

Read through the statements; write down the letters for the rings; identify the ring with the lowest weight; assign it a weight x

D	E	F	G	H
		x		

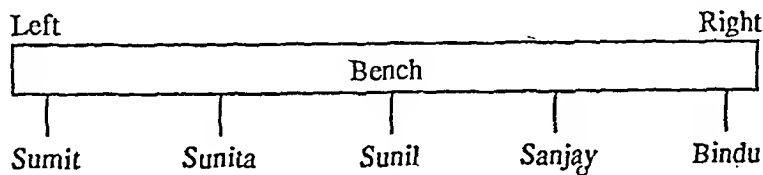
Read through the statements again and fill in the weights relative to the weight of ring F

D	E	F	G	H
$9x$	$4.5x$	x	$2x$	$4x$

The answers are now easy to find

Questions 40 to 45

Make a sketch of the sitting positions based on the description given:—



40. (c) 41. (b) 42. (c) 43. (c)
 44. (b) 45. (b)

Section Six

NON-VERBAL INTELLIGENCE TESTS

Non-verbal tests are those tests in which words, figures, digits and letters, are seldom used. Here, the knowledge of words, their meanings and usage, is not required. However, your power of logical reasoning, quickness of thinking and the ability to differentiate or find correlations between given objects/figures/patterns will be tested. These tests use diagrams, figures and designs to evaluate your mental ability rather than your academic knowledge.

Such tests were originally designed by Professor Binet. He designed non-verbal intelligence test to judge a person's power of memory, the nature of mental images, imagination, attention comprehension, suggestibility, aesthetic feelings, or sense of appreciation and visual judgement. In 1905, Binet and his colleague, Simon, devised the Binet-Simon scale which was used to identify the differences in degree of mental development. Most competitive examinations today use non-verbal tests which are based on the Binet-Simon system.

The most commonly used non-verbal tests are series, analogies spotting similar patterns, arranging figures in proper sequence, spotting the odd one out, pattern completion, spotting hidden figures and finding a similar pattern. In this chapter each one of the these types is explained with worked out examples followed by practice tests.

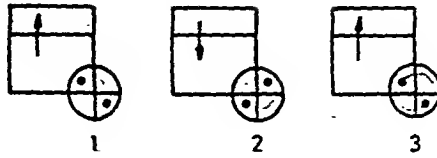
6.1 Series Completion

In this type of non-verbal test, two sets of figures pose the problem. The sets are called *Problem Figures* and *Answer Figures*. Each problem figure changes in design from the preceding one. The answer figure set contains 4 or 5 figures marked A, B, C, D, E. You are required to choose the correct answer figure, which would best continue the series. These tests are based on pattern perception tests, originally devised in England by L S Penrose.

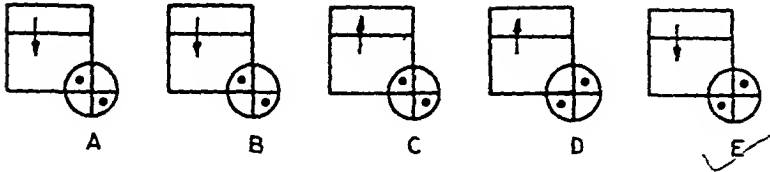
Example

DIRECTIONS: Study the problem figures marked 1, 2 and 3 carefully and try to establish the relationship between them. From the answer figures marked A, B, C, D and E pick out the figure which most appropriately completes the series.

PROBLEM FIGURES



ANSWER FIGURES



Answer: E

Explanation: Note the direction of arrow which changes alternately. The dots are also changing alternately. Hence, we are looking for a figure in which the arrow points down and the dots are positioned as in figure 2.

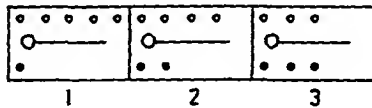
Non-verbal Series may be classified as follows:

QUANTITATIVE TYPE

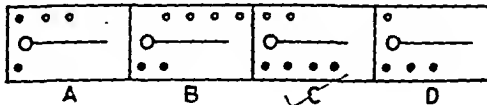
In these questions the items in the diagrams either increase or decrease in number.

Example

PROBLEM FIGURES



ANSWER FIGURES



Answer: C

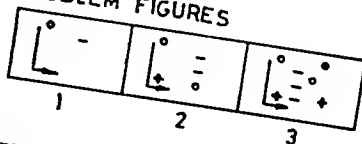
Explanation: The small circles are decreasing consecutively and the dots are increasing.

(See Exercise on the next page)

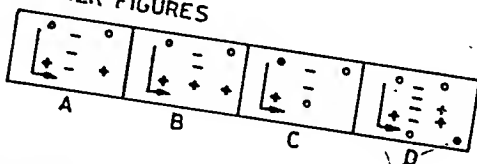
Exercise

1.

PROBLEM FIGURES

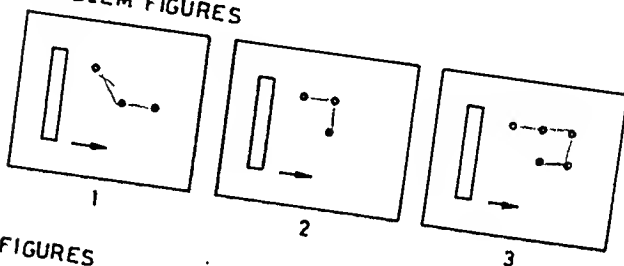


ANSWER FIGURES

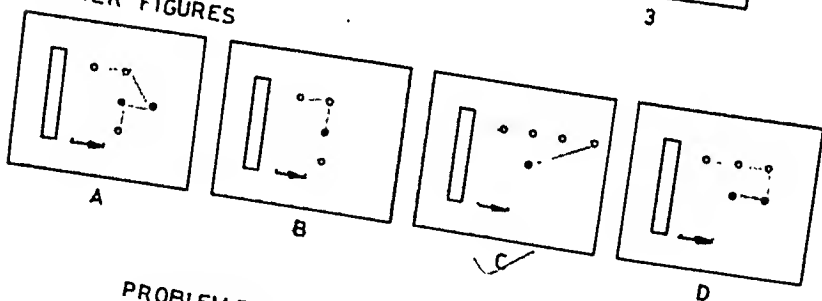


2.

PROBLEM FIGURES

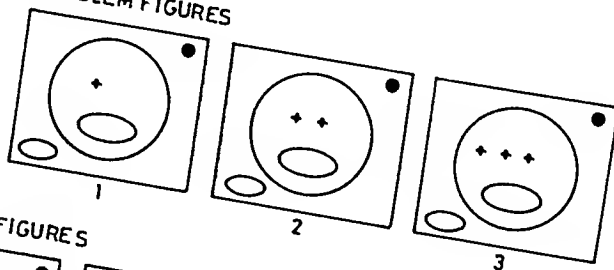


ANSWER FIGURES

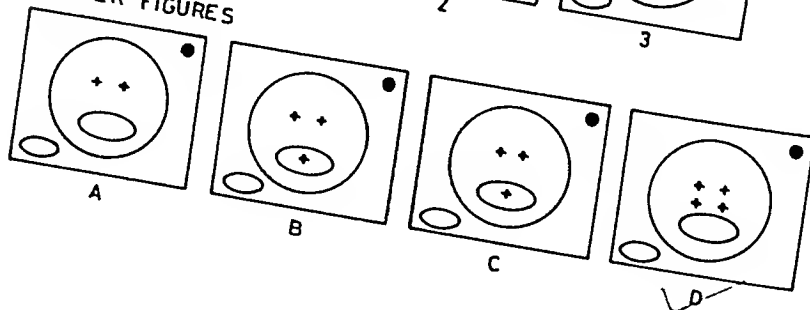


3.

PROBLEM FIGURES

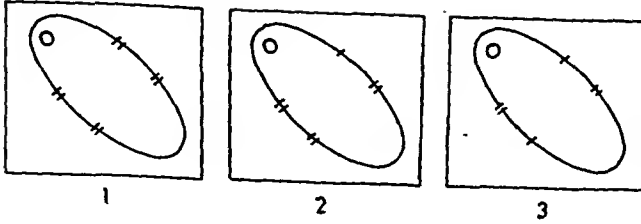


ANSWER FIGURES

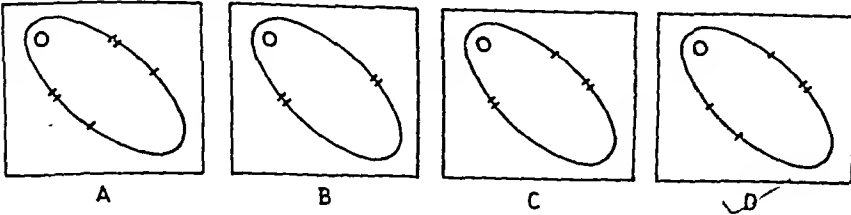


4.

PROBLEM FIGURES



ANSWER FIGURES



Answers 1.(D) 2.(C) 3.(D) 4.(D)

Explanation

1. Small circles are increasing one by one. Similarly the plus and minus signs.

2. Small circles are adding up. Since figure 1 has one small circle, figure 2 has two small circles, figure 3 has three small circles, figure 4 should have four small circles. The black dots are changing with the sequence of 2 : 1

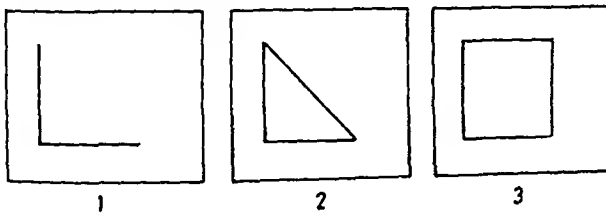
3. Signs of Plus are adding up one by one. Figure 1 has one plus sign, figure 2 has two signs, figure 3 has three signs, the next figure should have 4 signs to keep the same pattern.

4. Here a decreasing trend is followed. In the first figure there are 8 lines cutting through the sides of the sphere. Second figure has 7 lines. The third figure has 6 lines. To continue the series, fourth figure should have 5 lines.

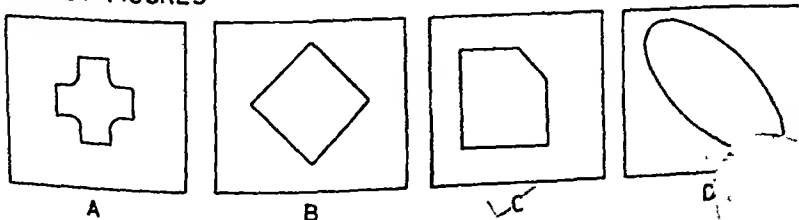
QUALITATIVE TYPE

The qualitative characteristics of various elements in the diagrams change to complete the series.

Example PROBLEM FIGURES



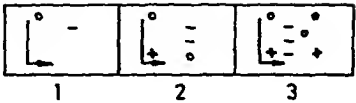
ANSWER FIGURES



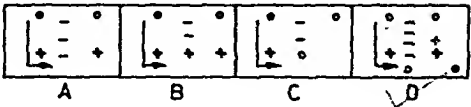
Exercise

1.

PROBLEM FIGURES

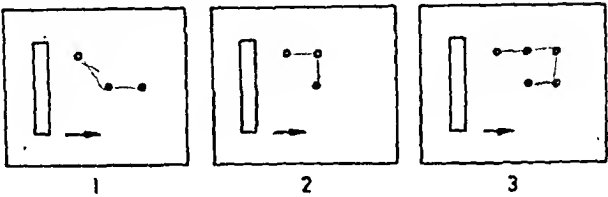


ANSWER FIGURES

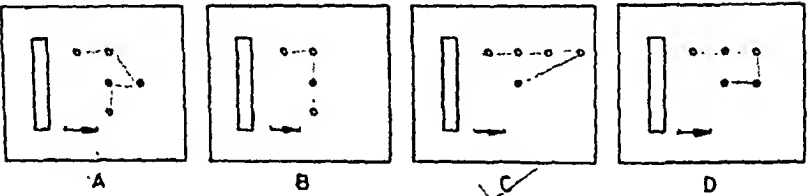


2.

PROBLEM FIGURES

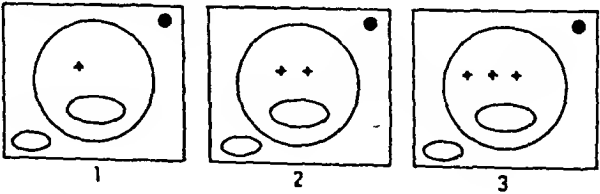


ANSWER FIGURES

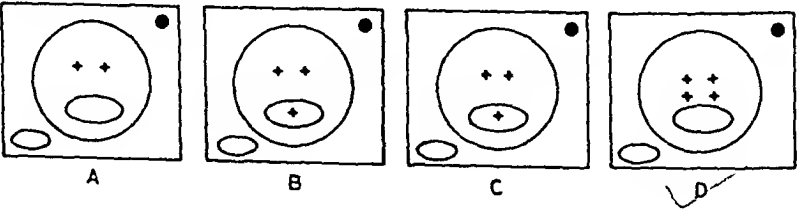


3.

PROBLEM FIGURES

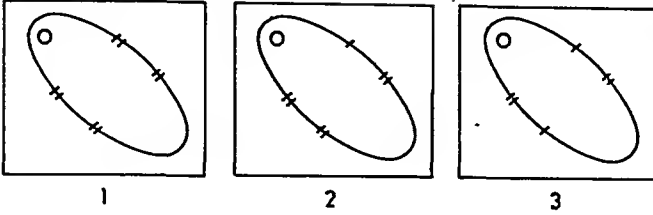


ANSWER FIGURES

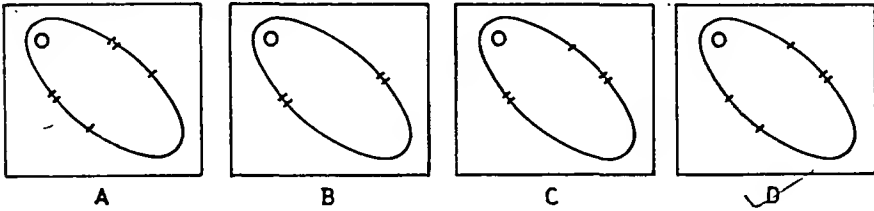


4.

PROBLEM FIGURES



ANSWER FIGURES



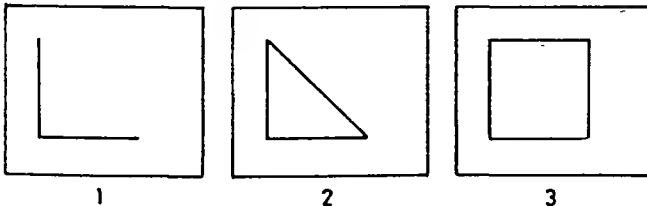
Answers 1.(D) 2.(C) 3.(D) 4.(D)

Explanation

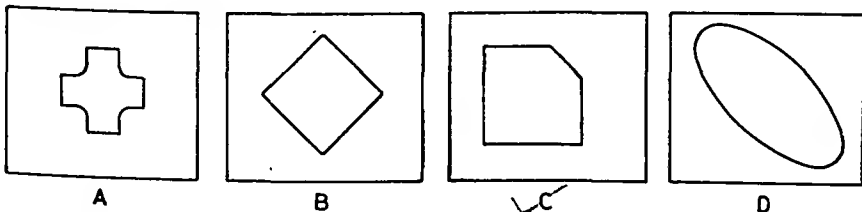
1. Small circles are increasing one by one. Similarly the plus and minus signs.
2. Small circles are adding up. Since figure 1 has one small circle, figure 2 has two small circles, figure 3 has three small circles, figure 4 should have four small circles. The black dots are changing with the sequence of 2 : 1
3. Signs of Plus are adding up one by one. Figure 1 has one plus sign, figure 2 has two signs, figure 3 has three signs, the next figure should have 4 signs to keep the same pattern.
4. Here a decreasing trend is followed. In the first figure there are 8 lines cutting through the sides of the sphere. Second figure has 7 lines. The third figure has 6 lines. To continue the series, fourth figure should have 5 lines.

QUALITATIVE TYPE

The qualitative characteristics of various elements in the diagrams change to complete the series.

Example PROBLEM FIGURES

ANSWER FIGURES



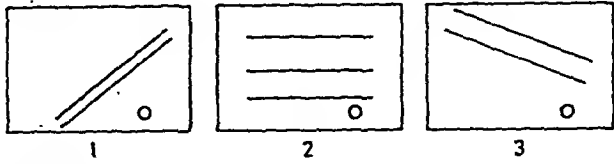
Answer : C

Explanation: All figures in problem figures are regular geometric figures and number of angles in each figure increase.

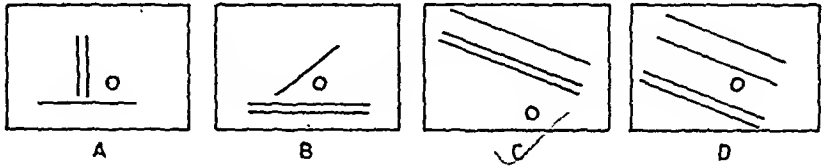
Exercise

1.

PROBLEM FIGURES

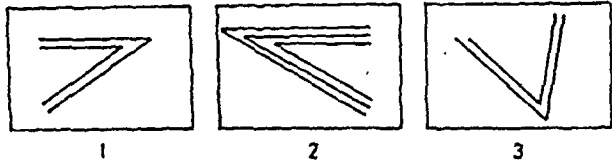


ANSWER FIGURES

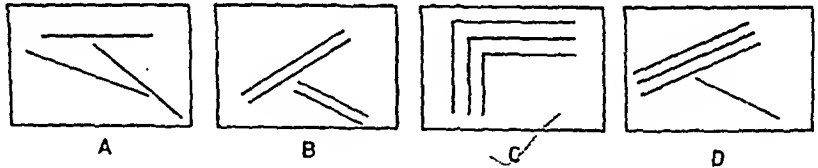


2.

PROBLEM FIGURES

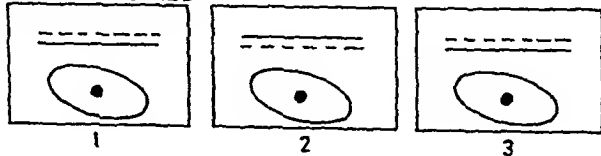


ANSWER FIGURES

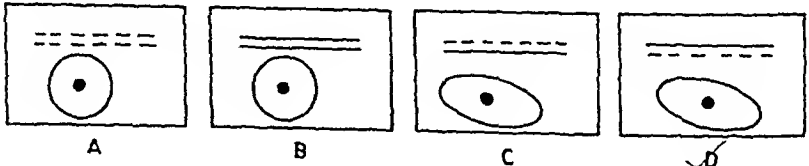


3.

PROBLEM FIGURES

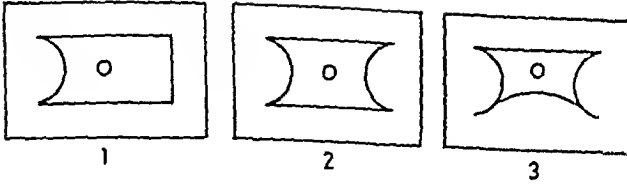


ANSWER FIGURES

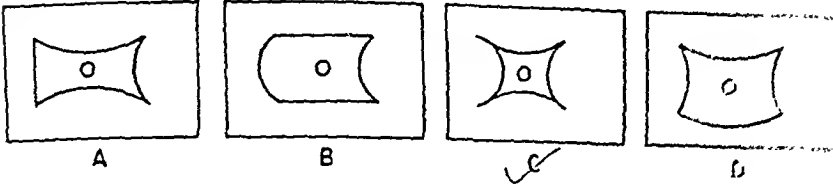


4.

PROBLEM FIGURES



ANSWER FIGURES



Answers 1.(C) 2.(C) 3.(D) 4.(C)

Explanation

1. Problem figures contain parallel lines. First figure has two parallel lines and the second figure has three parallel lines. Since the third figure has four parallel lines, to continue the series the fourth figure should have three lines.

2. Double and treble lined angular figures are alternately changing. First figure has double lined angle. Second figure has treble lined angle. Again the third figure has double lined angle. To keep the series in similar pattern the fourth figure should have treble lined angle.

3. Here the complete and dotted lines are alternately changing. Figure 1 has a dotted line above and a complete line below. Figure 2 has a complete line above and a dotted line below. Figure 3 is repetition of figure 1. Hence, Figure 4 should have same characteristics as figure 2 in order to continue the pattern.

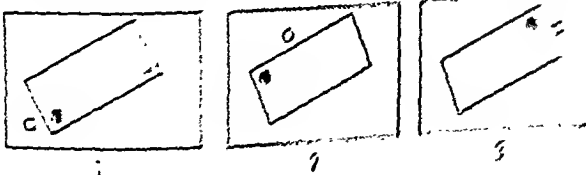
4. Straight lines are replaced by concave lines one by one. Figure 1 has one concave line, Figure 2 has two concave lines and so on.

ROTATIVE TYPE

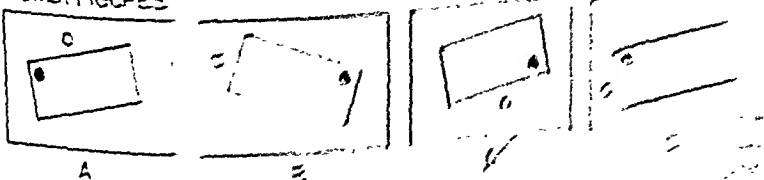
The various elements in the diagrams move in a specific manner. They may rotate in clockwise or anticlockwise direction.

Example

PROBLEM FIGURES



ANSWER FIGURES



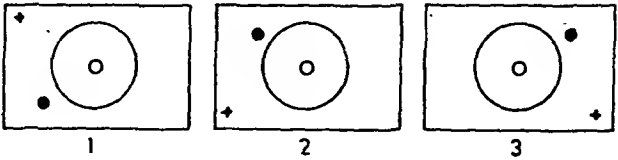
Answer : C

Explanation: The black dot is moving clockwise inside and small circle is moving clockwise outside the rectangular figure.

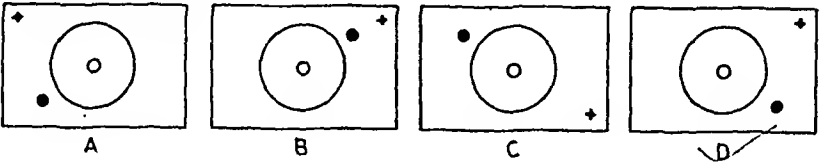
Exercise

1.

PROBLEM FIGURES

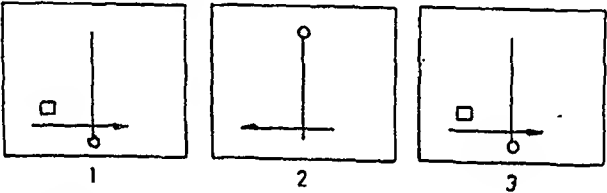


ANSWER FIGURES

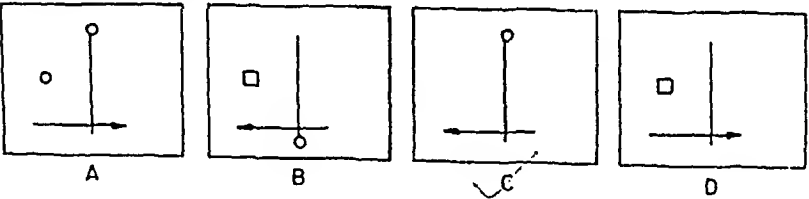


2.

PROBLEM FIGURES

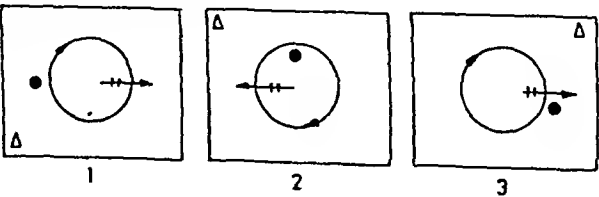


ANSWER FIGURES

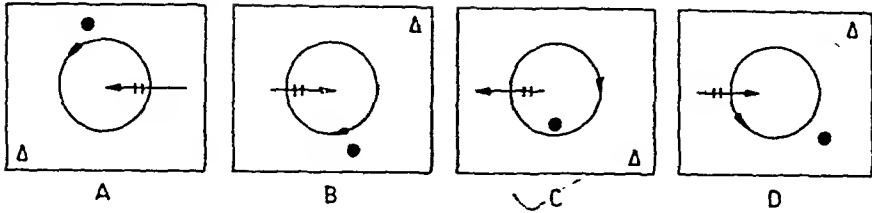


3.

PROBLEM FIGURES

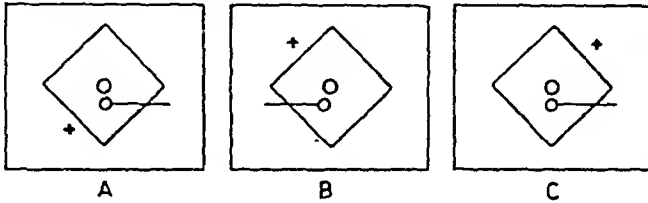


ANSWER FIGURES

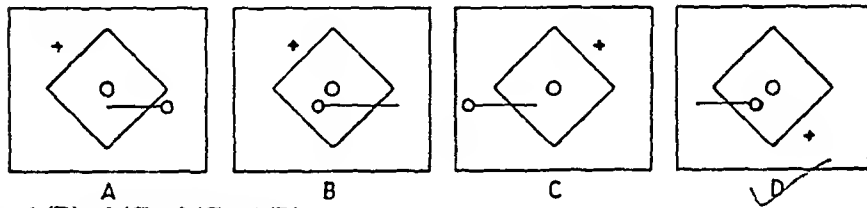


4.

PROBLEM FIGURES



ANSWER FIGURES



Answer 1.(D) 2.(C) 3.(C) 4.(D)

Explanation

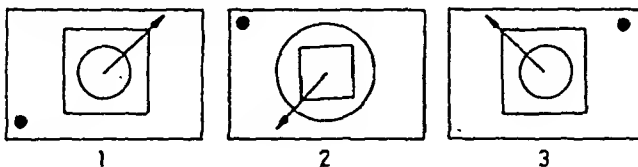
1. The plus sign is rotating anti-clockwise within the square. The black dot is rotating clockwise around the circle.
2. The direction of the arrow is changing alternately. Similarly the head of the pin like figure is changing direction alternately.
3. The black dot is moving clockwise and at the same time changing position. First it is inside the circle and then outside. The pattern is followed alternately.
4. The sign of plus is rotating clockwise. The pin is changing direction alternately.

MULTI-RELATIONAL SERIES

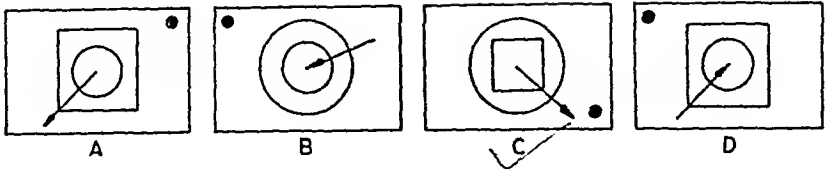
These are mixed series in which various elements in diagrams increase/decrease in number, change directions/positions in a set pattern.

Example

PROBLEM FIGURES



ANSWER FIGURES



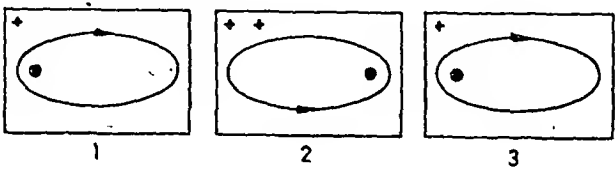
Answer : C

Explanation: Note movement of dot which is clockwise and the arrow moves in and out in opposite direction alternately. the circle and square interchange.

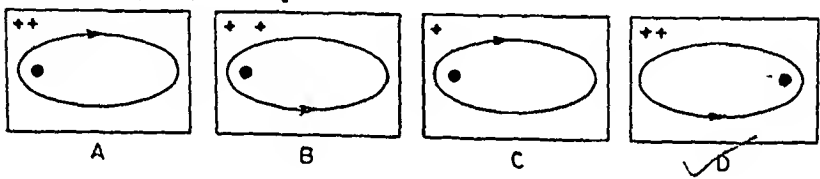
Exercise

1.

PROBLEM FIGURES

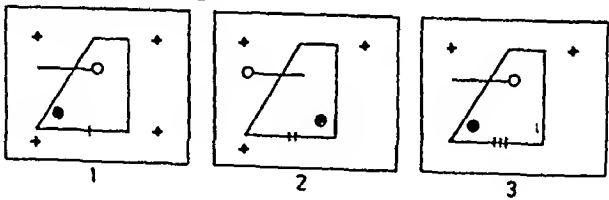


ANSWER FIGURES

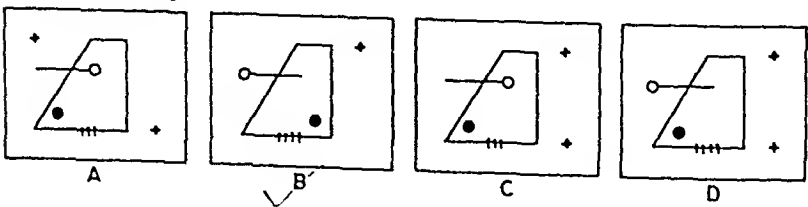


2.

PROBLEM FIGURES

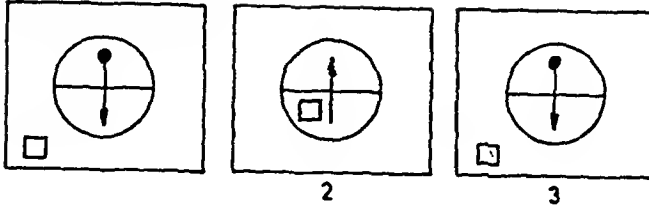


ANSWER FIGURES



3.

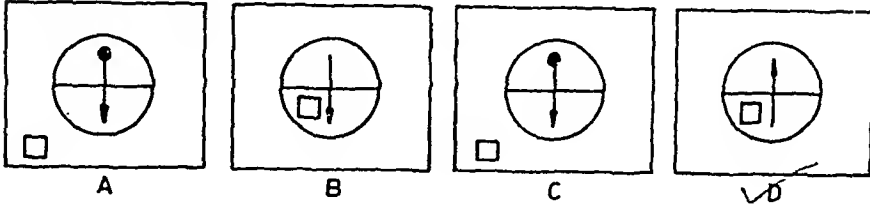
PROBLEM FIGURES



2

3

ANSWER FIGURES



A

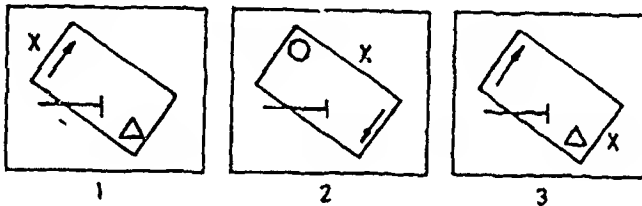
B

C

D

4.

PROBLEM FIGURES

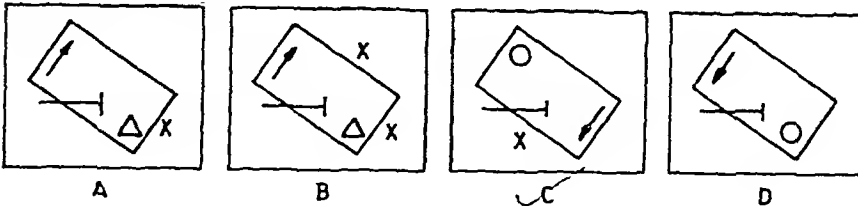


1

2

3

ANSWER FIGURES



A

B

C

D

Answers 1.(D) 2.(B) 3.(D) 4.(C)

Explanation

1. The black dot is alternately changing sides. The sign of plus is maintaining the ratio of 1:2. The sphere is moving first clockwise and then anticlockwise.

2. The black dot is alternately changing sides. The pin is moving inward and outward alternately. The number of plus signs are reducing one by one. The small lines cutting the base of the main figure are increasing one by one.

3. The arrow inside the circle moves up and down and the small square goes inside the circle once and then comes outside. The trend is maintained alternately.

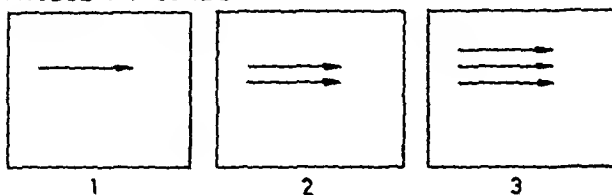
4. The sign of plus is moving clockwise outside the rectangle. The arrow inside is moving up and down changing sides alternately.

RATIO BASED SERIES

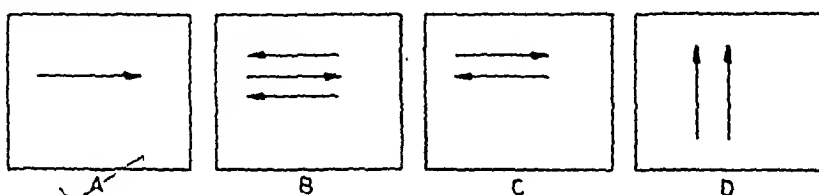
Various elements in the problem figures follow a set ratio.

Example

PROBLEM FIGURES



ANSWER FIGURES



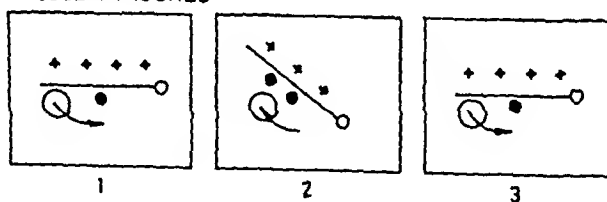
Answer : A

Explanation: Problem Figures are in ratio of 1:2:3. The same ratio should continue in next series as well. Hence Figure A starts the new series.

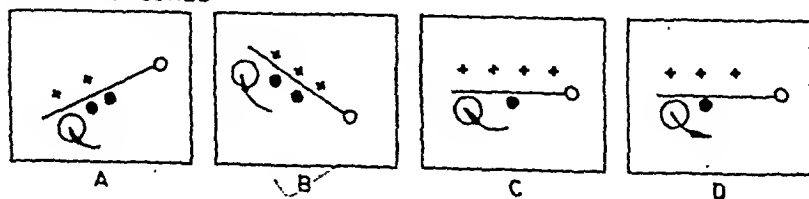
Exercise

1.

PROBLEM FIGURES

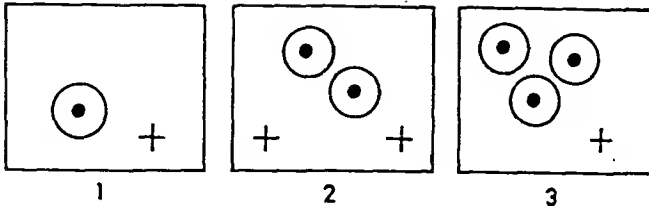


ANSWER FIGURES

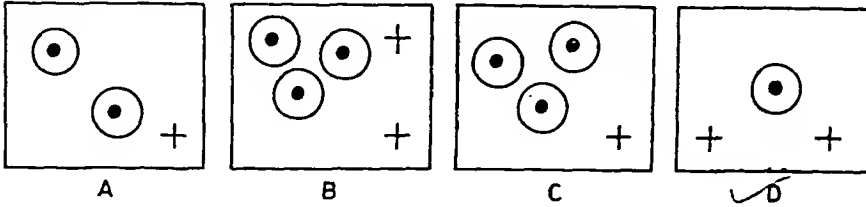


2.

PROBLEM FIGURES

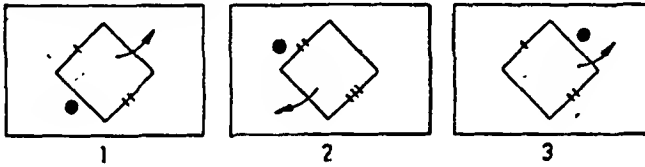


ANSWER FIGURES

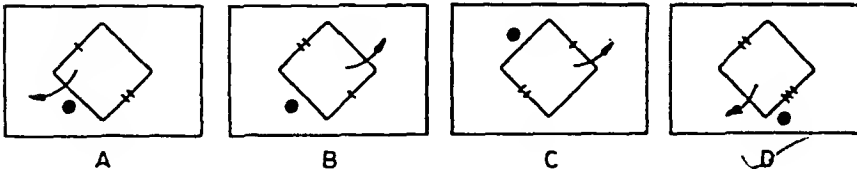


3.

PROBLEM FIGURES

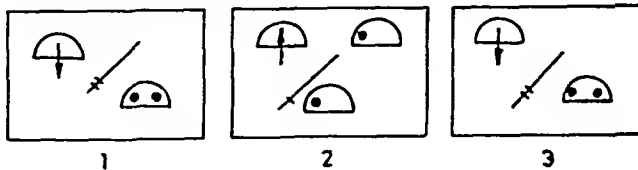


ANSWER FIGURES

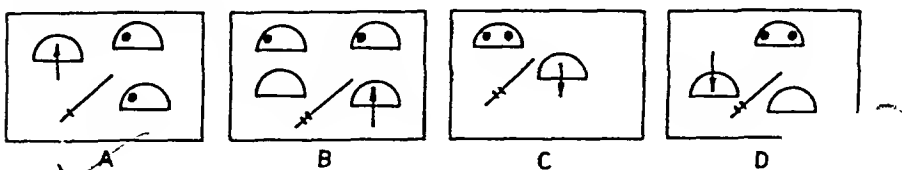


4.

PROBLEM FIGURES



ANSWER FIGURES



Answers 1.(b) 2.(d) 3.(d) 4.(a)

Explanation

1. The sign of plus is maintaining a ratio of 4:3 and black dots are in the ratio of 1:2. The arrow is moving in and outside the circle alternately.

2. The ratio of small circles is 1:2:3. As the fourth figure should start the new series, it should have same characteristics as figure 1. The plus signs are in the ratio of 1:2.

3. Small lines cutting through the square are in the ratio of 3:5. The dot is moving clockwise outside the square. The arrow is changing directions alternately.

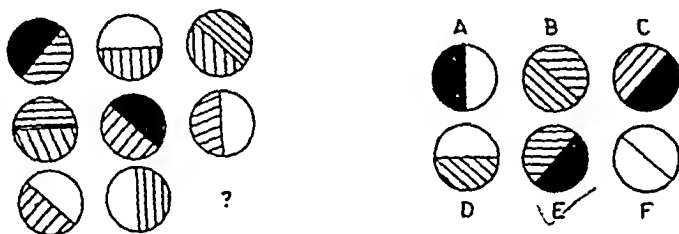
4. The ratio of semicircle is 2:3. Number of black dots is no doubt constant but moves alternately from one semicircle to two semicircles.

COMPLETION OF SERIES FROM 5-6-NUMBERED FIGURES

These series are based on mixed operations in which various elements change their directions/positions, increase or decrease in number as well as changing qualitatively. The problem figure contains several separate figures and one blank space. The answer choices are several numbered figures marked A,B,C,D,E and F. You have to choose one of the answer figures which should replace the question mark or appropriately fit in the blank space given in the problem figure.

Example

Select the correct figure from the six numbered figures to continue the series and replace the question mark:

**Answer : E**

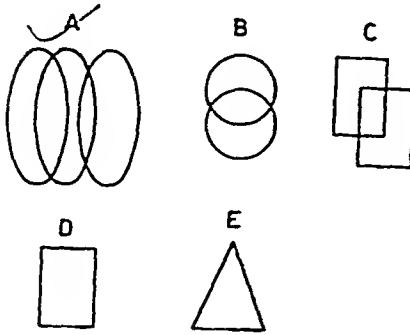
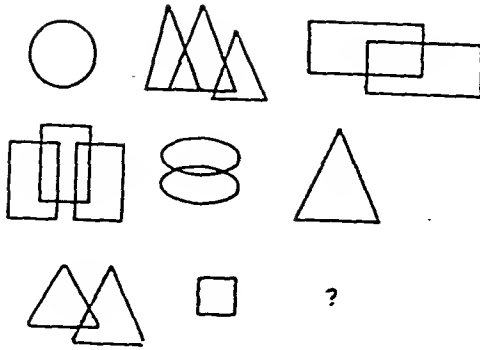
Look at the problem figures as rows (or columns). In each row (or column) of 3 circles, half of the circle is shaded in the same way and of 3 circles, the shading in the other half changes. Thus the answer figure must have half of the circle shaded black. This limits the choice to A,C and E. Look at the pattern in the other half. This results in choosing answer E.

Exercise

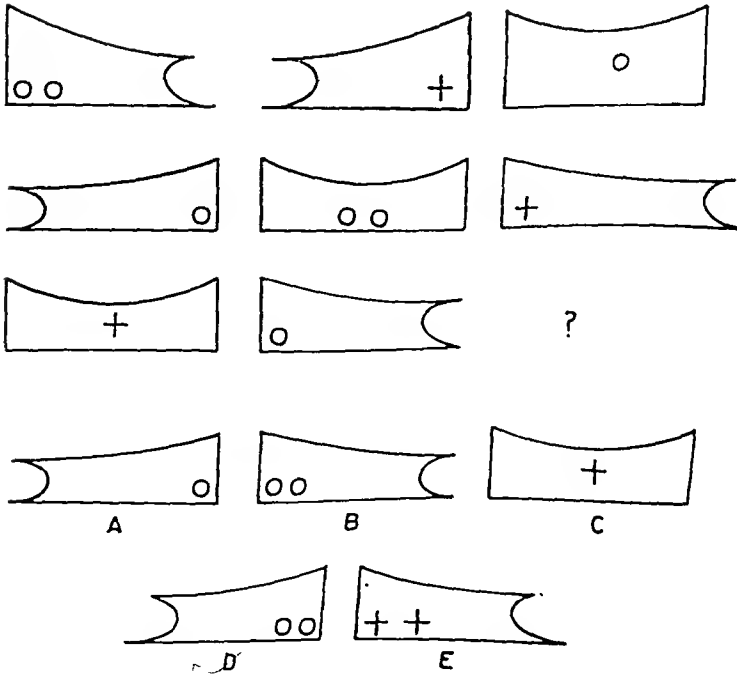
Select the appropriate figure from A-E to replace the question mark.

(See Questions on the next page)

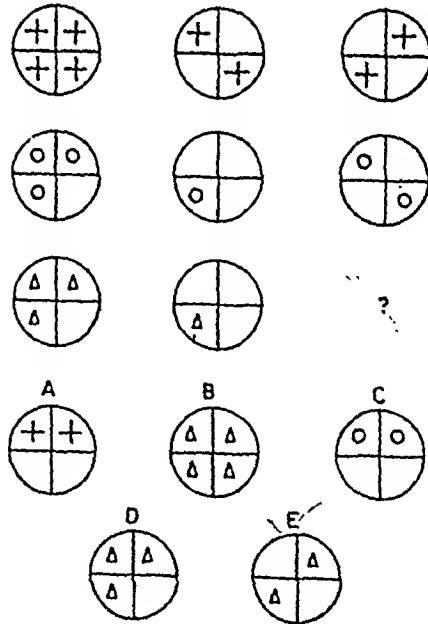
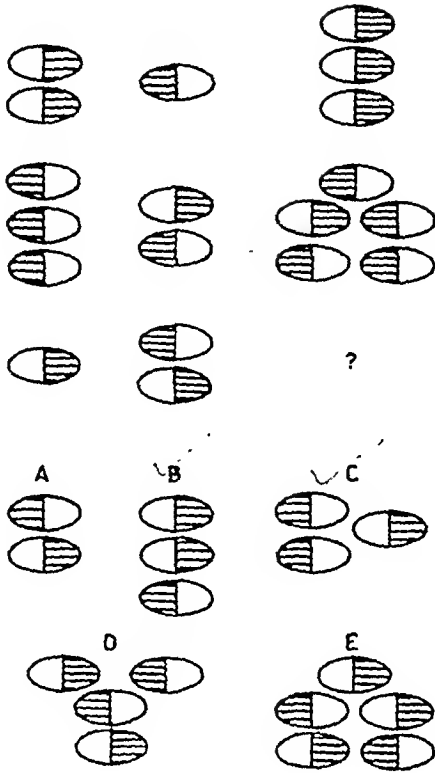
1.



2.



3.



Answers 1.(A) 2.(D) 3.(B or C) 4.(E)

Explanations

1. The pattern is formed from a circle, square or equilateral triangle, squeezed vertically or squashed horizontally and changing its number.

2. There are three main figures and within each a double circle, a single circle or a plus sign is enclosed.

3. The third figure in each row is the sum total of figure 1 and 2. Hence in row 1 we find $2 + 1 = 3$ in row 2 we find $3 + 2 = 5$ and therefore in row 3 there should be $1 + 2 = 3$.

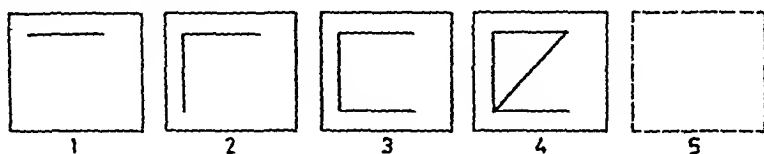
4. The first circle of each row contains total of signs given in the following two figures. Hence in first circle there are four plus signs because in each following circle there are 2 each plus signs which total up to 4. Similarly in second row there are 3 small circles in the first circle which is total of the circles in the following figures. The third row consists of small triangles within the circle. Since the first circle has three triangles and the second circle has one there should be two triangles in the third circle to give total of three triangles in the first circle.

PRACTICE TESTS

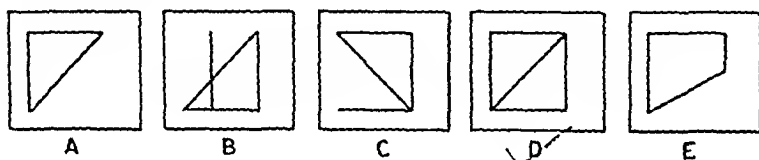
COMPLETING THE SERIES

There are two diagrams in each of the following questions. The series of diagram called **PROBLEM FIGURE** consists of figures in a particular sequence. Below the problem figure you will find a series of diagrams called **ANSWER PATTERN**. You have to pick out the figure from the Answer Pattern which should come at the end of the problem figure, i.e., dotted square. You have to choose the serial number of the figure in the answer pattern which should come next in the series to complete the pattern.

1. PROBLEM FIGURES

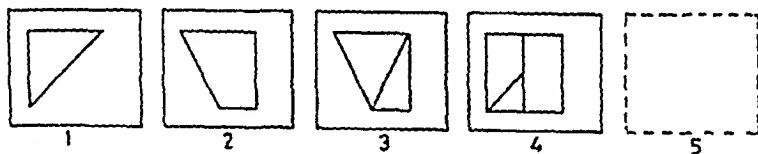


ANSWER FIGURES

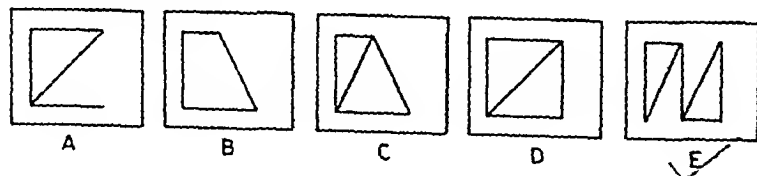


2.

PROBLEM FIGURES

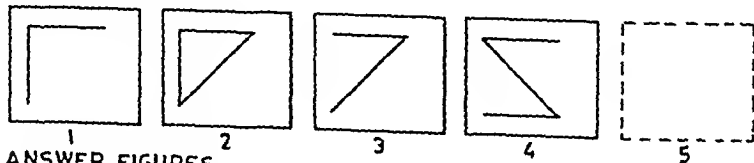


ANSWER FIGURES

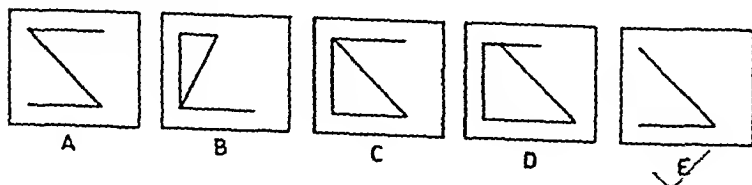


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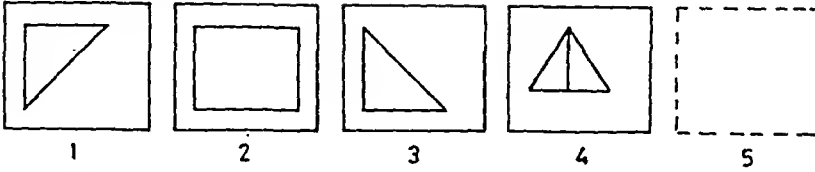
PROBLEM FIGURES



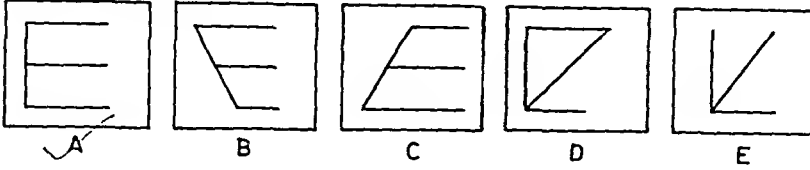
ANSWER FIGURES



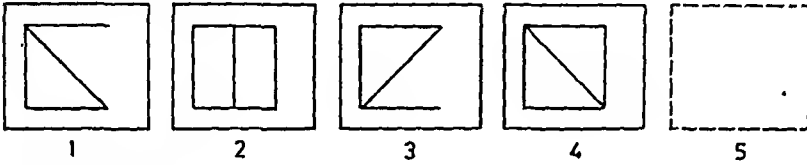
4. PROBLEM FIGURE



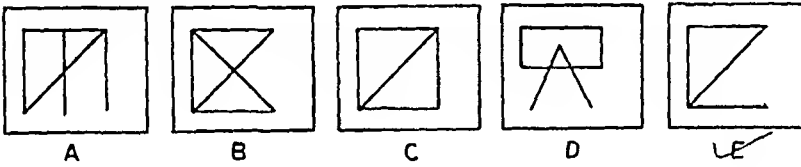
ANSWER FIGURES



5. PROBLEM FIGURES

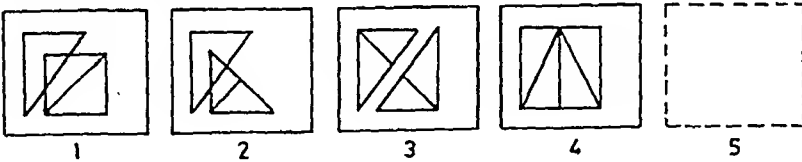


ANSWER FIGURES

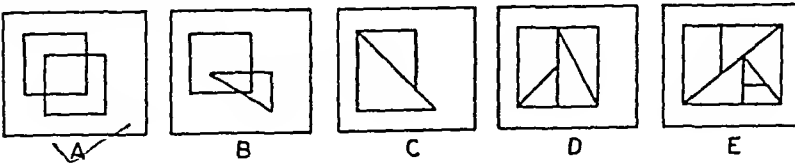


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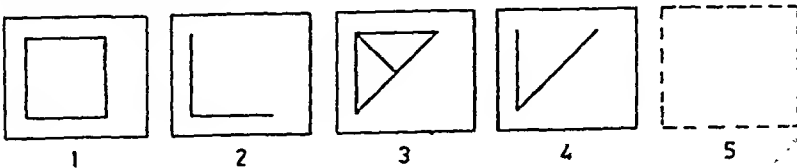
PROBLEM FIGURES



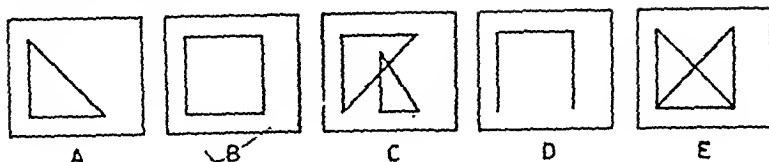
ANSWER FIGURES



7. PROBLEM FIGURES

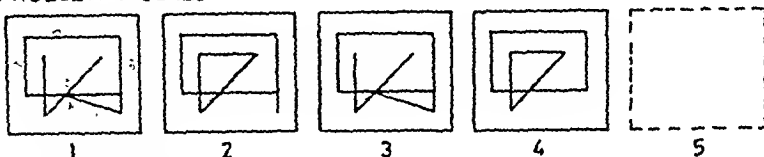


ANSWER FIGURES

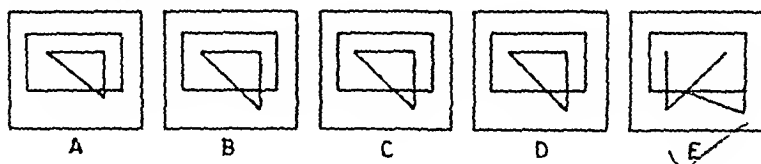


8.

PROBLEM FIGURES



ANSWER FIGURES

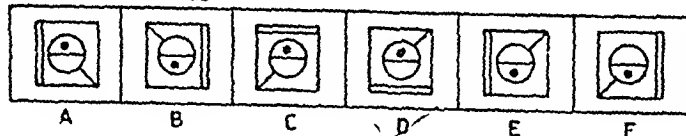


9.

PROBLEM FIGURES

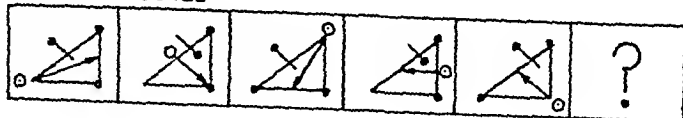


ANSWER FIGURES

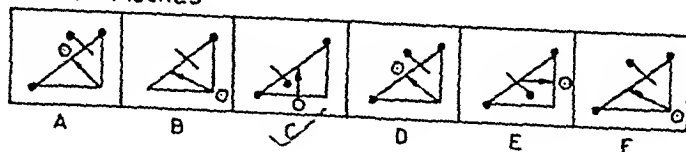


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PROBLEM FIGURES

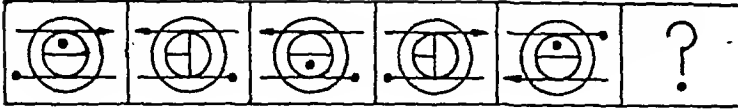


ANSWER FIGURES

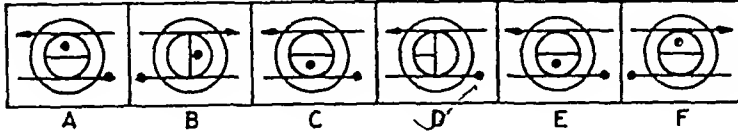


11.

PROBLEM FIGURES

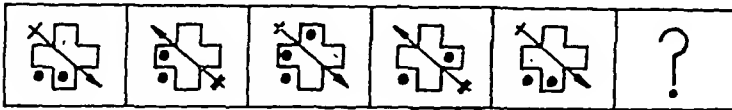


ANSWER FIGURES

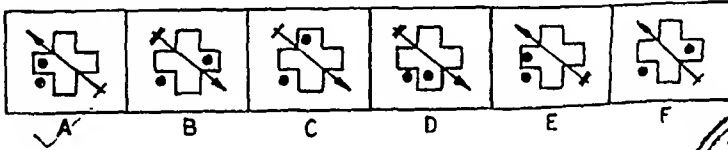


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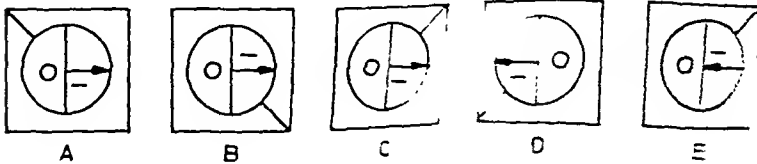
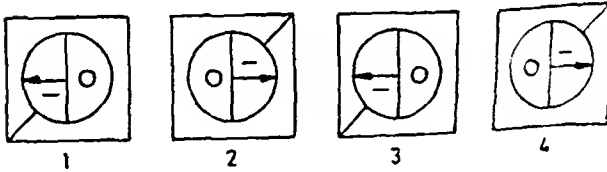
PROBLEM FIGURES



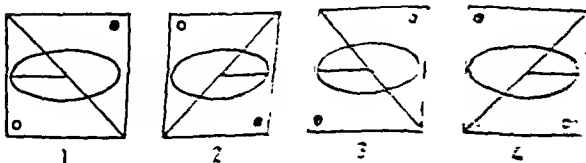
ANSWER FIGURES

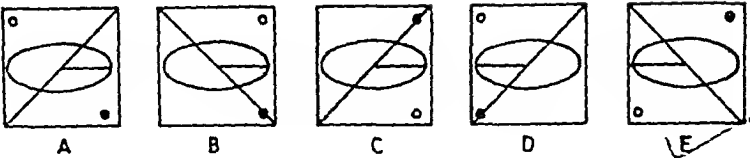


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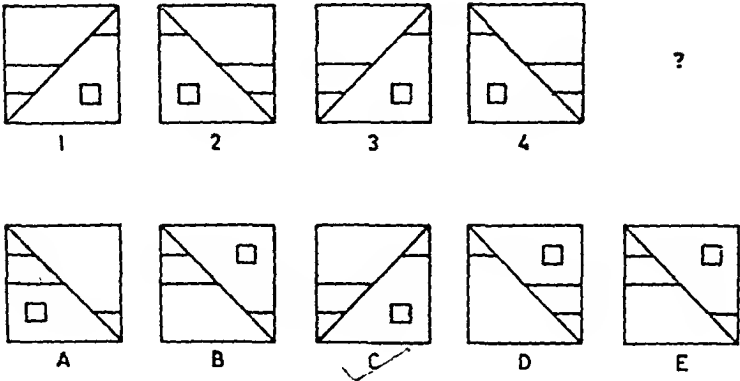


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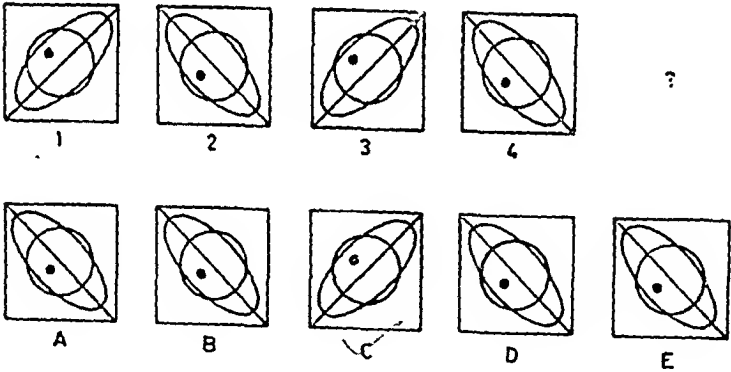




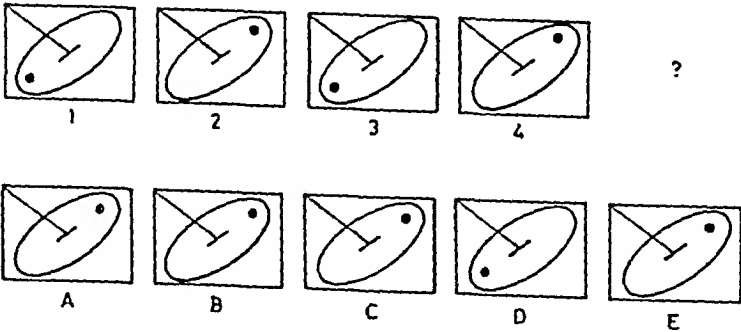
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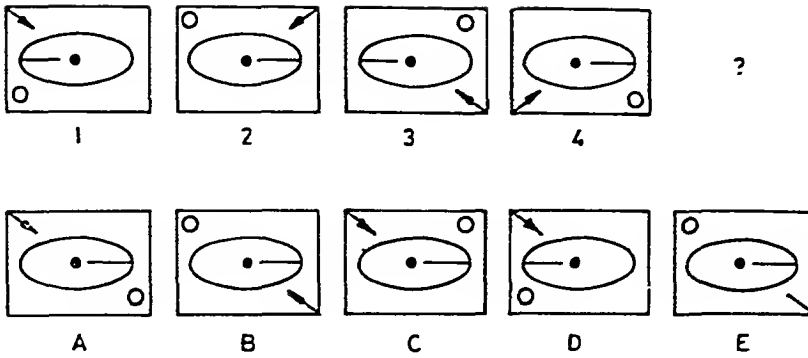
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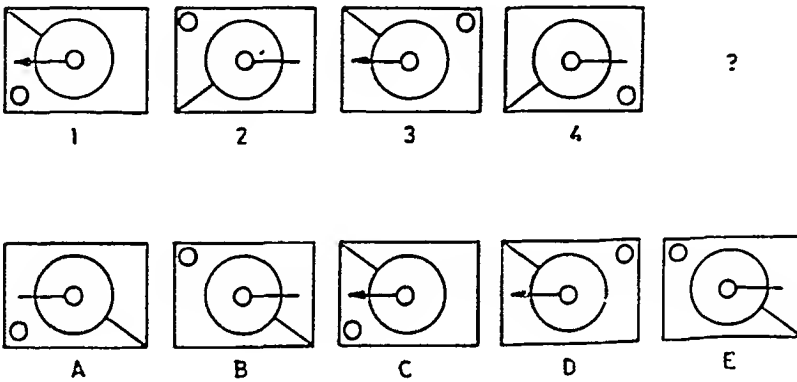
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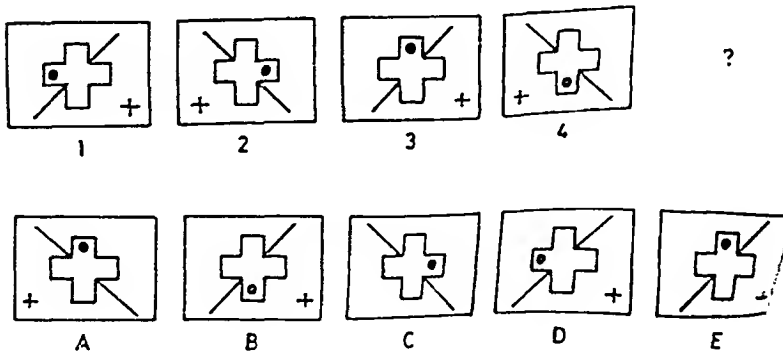
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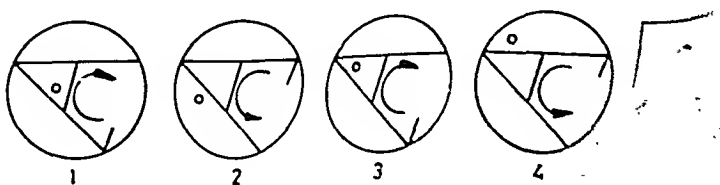
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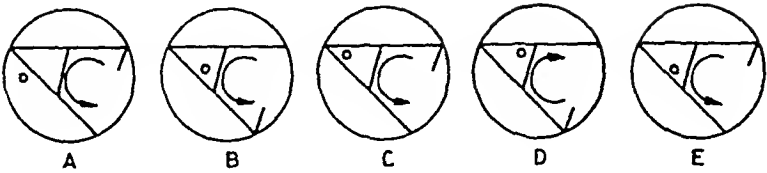


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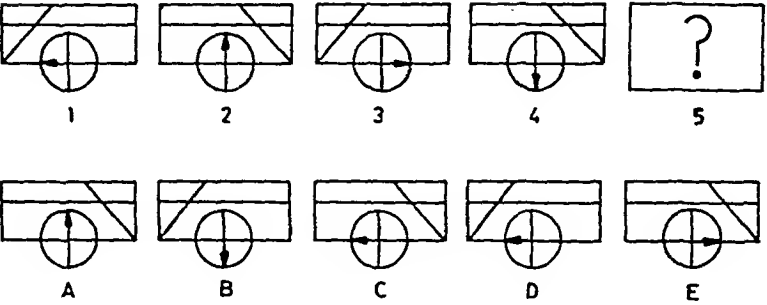


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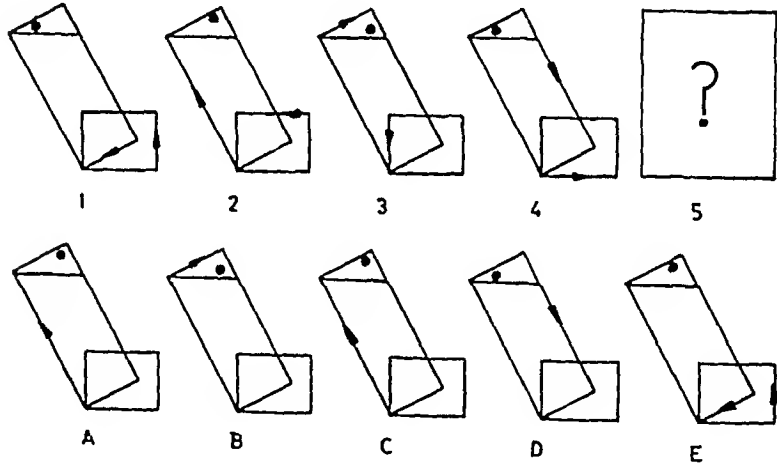




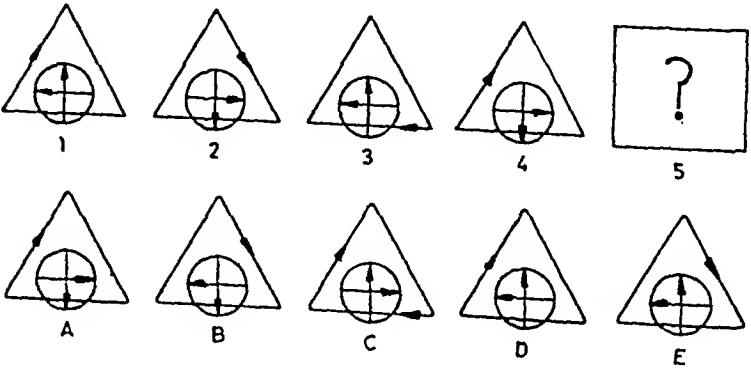
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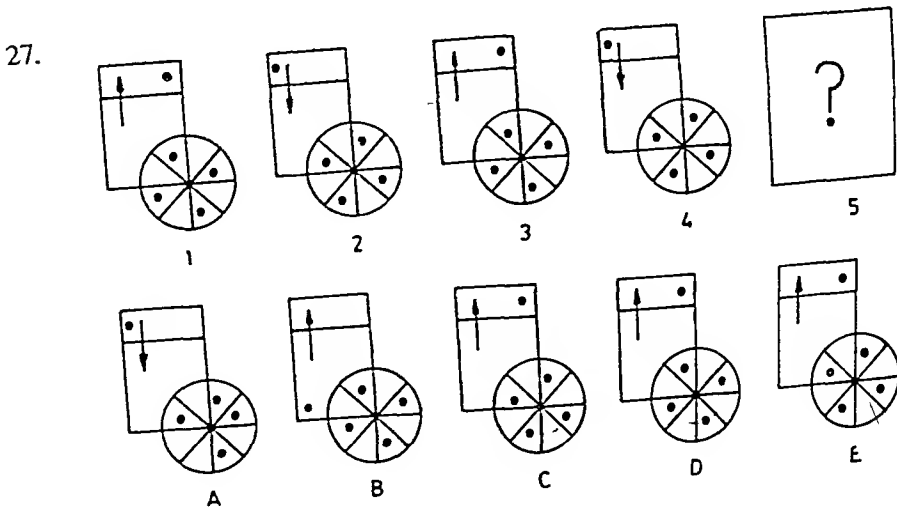
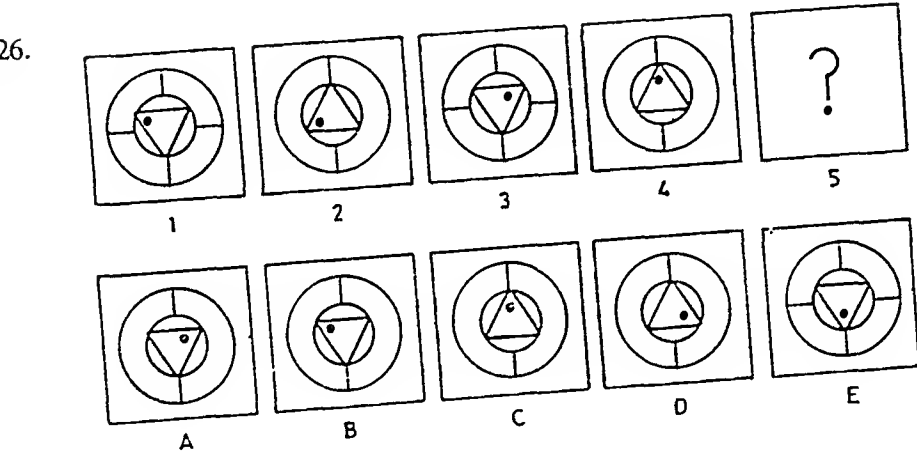
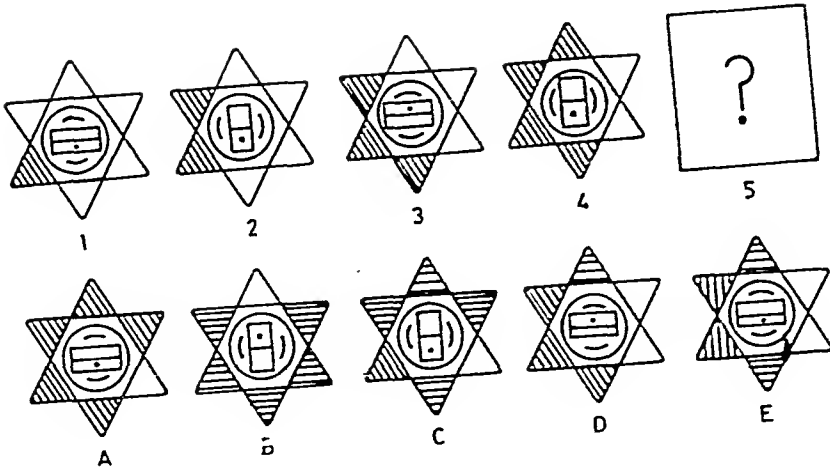


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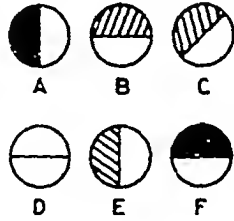
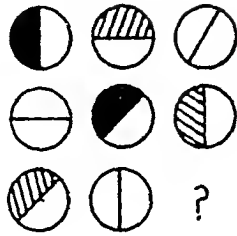


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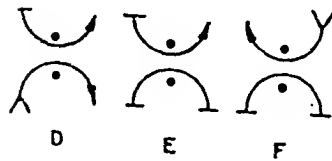
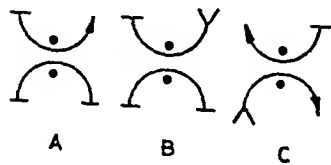
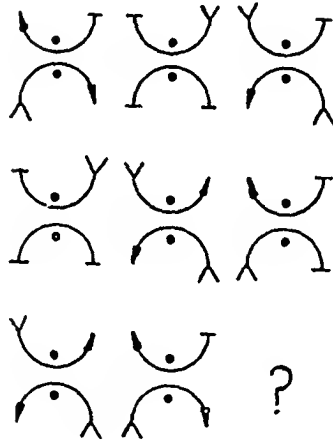




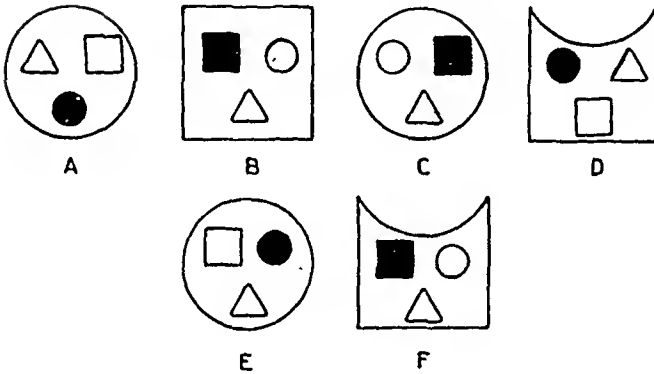
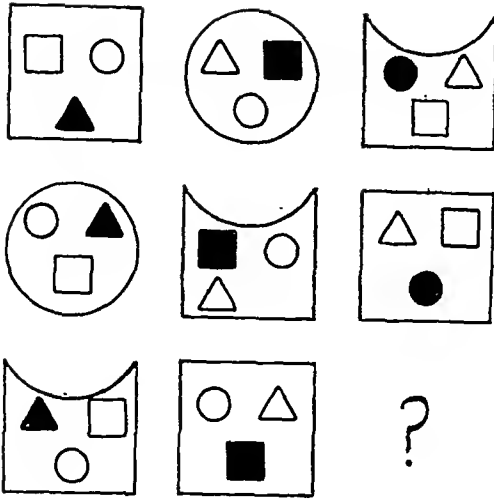
28.



29.



30.



Answers

- | | | | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1.(D) | 2.(E) | 3.(E) | 4.(E) | 5.(E) | 6.(A) | 7.(B) | 8.(E) | 9.(D) |
| 10.(C) | 11.(D) | 12.(E) | 13.(D) | 14.(E) | 15.(C) | 16.(C) | 17.(D) | 18.(D) |
| 19.(C) | 20.(D) | 21.(D) | 22.(D) | 23.(E) | 24.(E) | 25.(A) | 26.(E) | 27.(D) |
| 28.(F) | 29.(B) | 30.(E) | | | | | | |

Explanation

- Number of lines is increasing by one in each figure.
- Number of lines is increasing by one in each figure.
- Number of lines is increasing and decreasing alternatively.
- Same as above.
- Same as above
- Same as above.
- In first column the figure has 4 lines and in next column the number of lines is reduced to 2 and in next column number of lines is increased. Hence the ratio 4-2-4-2-4.
- Columns 1 and 3 have same type of pattern. Similarly columns 2 and 4 are matching. Based on this sequence next in series is figure (E).
- The black dot is moving up and down in the circle.

10. The small circle outside the triangle is travelling clockwise. The pin like figure is moving out and in alternately.

11. The line dividing the circle changes from horizontal position to vertical alternately.

12. The arrow changes direction alternately. The black dot inside the cross moves clockwise.

13. Movement of dot, arrow and the diagonal is turning alternately.

14. To maintain continuity of the series, the figure resembling figure 1 should come next.

15. Alternate series. Figure resembling figure 1 should follow.

16. Movement of dot and diagonal determines the pattern.

17. Alternate movement of dot in the spherical figure.

18. Alternate movement of small circle clockwise. Similar movement of arrow in the square.

19. Designs changing alternately. Figure 3 should be repeated after figure 4 with the change in small circle which is moving clockwise within the square.

20. Alternate change of diagonal, plus sign (+) and movement of small dot in the central figure.

21. D - Note direction of arrows, movement of dot from column to column in block 1 and in alternate column the small line across the end of the main figure is changing. Following this pattern in column 5 of block 1, figure D from block 2 fits well.

22. D - Note movement of arrow changing clockwise in the circle. The line making triangular figure on the top corner of the rectangular figure is changing alternatively in each column of block 1. Based on this sequence, figure D of block 2 will complete the series and fill in column 5 in block 1.

23. E - Note movement of arrow sign in clockwise direction larger rectangular and anticlockwise in smaller rectangular. The dot is as well across in clockwise direction in the triangular portion of bigger rectangular. Figure E in block 2 will fit in the blank column 5 of block 1.

24. E - Note clockwise movement of arrow sign across the triangle. The arrows in the circle changing clockwise as well. Figure E of block 2 follow the same pattern and will fit in blank column 5 in block 1.

25. A - Note shading of corners of stars increasing in each figure. The rectangular figure inside the circle changing from horizontal to vertical direction and movement of dot inside it as well changing in each alternative figure. Figure A fits in blank column 5. In other figures of block 2 the shading in different directions.

26. E - The triangle inside double line circle is changing position up and down alternatively and the dot moving anticlockwise in the triangle. Figure E of block 2 fits well in column 5 in block 2.

27. D - Note movement of arrow in alternate figures in block 1. The movement of dot in the circle is rotating clockwise leaving column each time blank. The dot in the upper portion is moving from right to left alternatively. Based on these parameters figure D fits in blank column 5 in block 1.

28. The circle can be halved with vertical, horizontal or diagonal lines, and either shaded, black, or white.

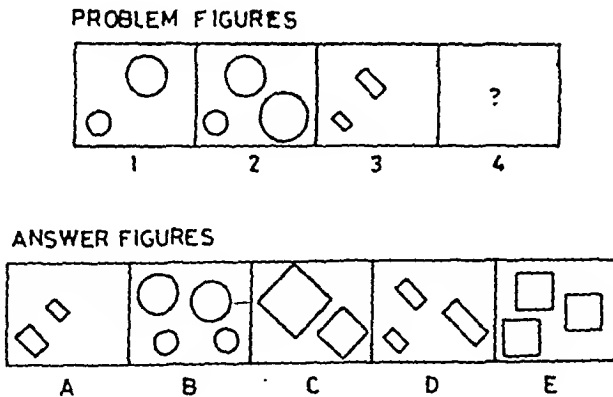
29. There are three endings for the curved lines: arrow-end, arrow-head, and straight line. In each of the four positions, each of these endings occurs only once in each row. Hence figure B should replace the question mark.

30. There are three main figures; inside each there are three small figures (triangle, square and circle), each of which can be in one of three positions; one of them is black. Each feature only occurs once in each row or column.

6.2 Analogies

The dictionary define 'analogy' as similarity or process of reasoning from parallel cases. These are also called relationship tests. The figures are presented in two sets: one is called Problem Figure and the other Answer Figure. The Problem Figure consists of two sets: the first set has two units marked 1 and 2 (some times separated by the sign of colon (:)) and the second set (which is some times separated by the sign ::), also has two units marked 3 and 4 (some times separated by the sign :). The figures in the first set bear a certain analogy or relationship with each other. The same relationship is reflected in the third figure of the second set. The fourth unit is either blank or contains a question mark (?). You have to choose from the set of answer figures marked A, B, C and D (some times E also), one figure bearing the same analogy as in the first unit to fill the blank column or replace the question mark.

Example



Answer : D

Explanation: Figure 1 has two circles, one small and one big. Figure 2 has three circles, all of different sizes. Hence the relationship between figure 1 and 2 is of size and number. The same relationship should exist between figure 3 and 4 to form correct analogical relationship. Figure D in answer figure has three rectangular figures varying in size. Hence figure 3 and D have same analogical relationship which exists between figure 1 and 2.

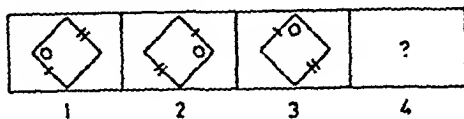
Analogical tests may be classified as follows.

ROTATIVE RELATIONSHIP

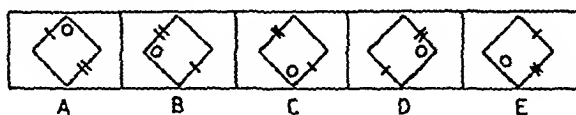
The various elements given in the diagram (dots, arrows, circles, squares, triangles, etc) rotate in certain specific directions, e.g. clockwise, anti-clockwise; once clockwise and then anti-clockwise and vice versa, from left to right or right to left, or once to left and then to right or vice versa.

Example

PROBLEM FIGURES



ANSWER FIGURES



Answer : C

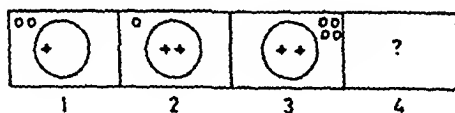
Explanation: In Fig. 1 the small circle is on the left hand side and in fig. 2 it moves to right hand side. In Fig. 3 the small circle is upward. Keeping in view the analogical relationship between Fig. 1 and Fig. 2, the small circle in fig. 4 should move downward. Hence 'C' is the answer.

QUANTITATIVE RELATIONSHIP

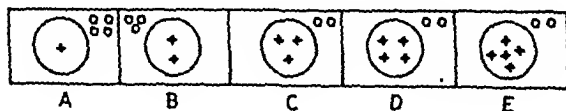
The various elements in the diagrams increase or decrease in a specific order. They may increase consecutively or decrease or alternately increase/decrease.

Example

PROBLEM FIGURES



ANSWER FIGURES



Answer : D

Explanation: In Fig. 1 there are two small circles outside the large circle and one plus sign inside the large circle. In Fig. 2, number of small circles becomes half and number of plus signs doubles. Since in Fig. 3 there are four small circles outside the large circle and two plus signs inside the large circle, keeping in view the

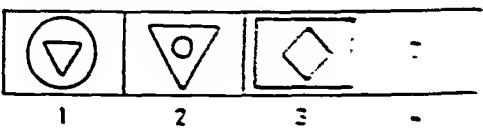
analogical relationship between Fig.1 and Fig. 2 in Fig. 4 circles (reducing by half) and four plus signs (increasing by half).

POSITIONAL ANALOGIES

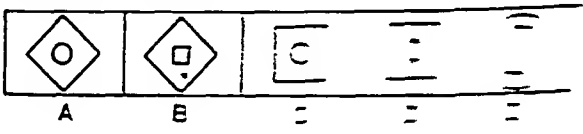
In such analogies the position of the elements change in a systematic direction/order.

Example

PROBLEM FIGURES



ANSWER FIGURES



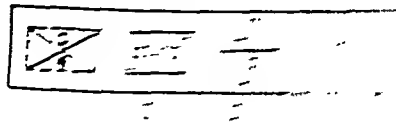
Answer : B

Explanation: In fig. 1 there is a triangle goes in and the inner figure comes out this analogical relationship, after fig. 3

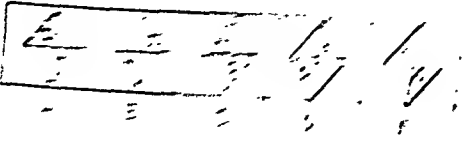
STRUCTURAL ANALOGIES

Example

PROBLEM FIGURES



ANSWER FIGURES



Answer : E

Explanation: In fig. 3 the figure are

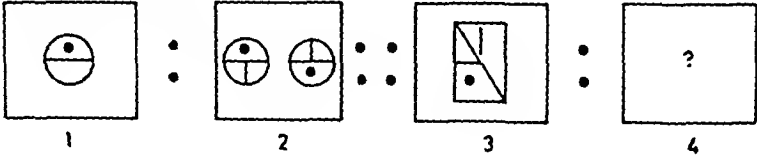
diagonal lines in fig. 4 should also be dotted. This relationship exists in fig. B in answer figures. Small circle and black dot are moving anti-clockwise in fig. 1 and 2. Similarly small circle and plus sign are moving in fig. 3 and fig. B.

Exercise

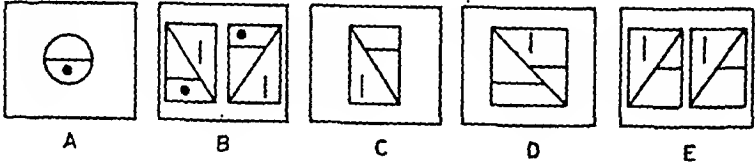
Non-verbal Analogies Find the relationship/analogy in the first set (2 figures) of Problem figure. Based on the same analogy find the suitable figure from Answer figure to fit in the blank space in following questions:-

1.

PROBLEM FIGURES

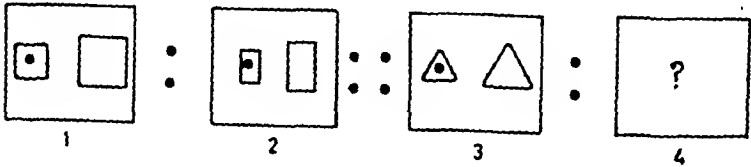


ANSWER FIGURES

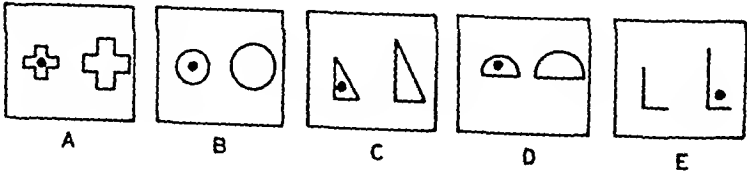


2.

PROBLEM FIGURES

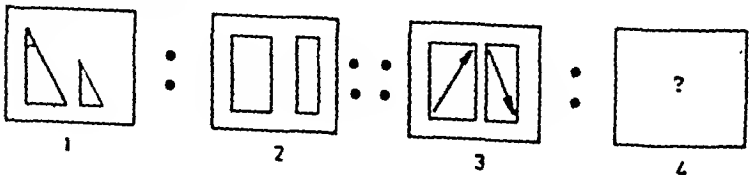


ANSWER FIGURES

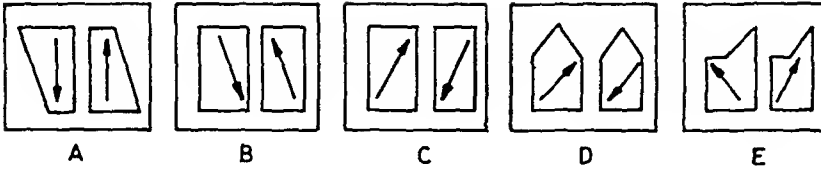


3.

PROBLEM FIGURES

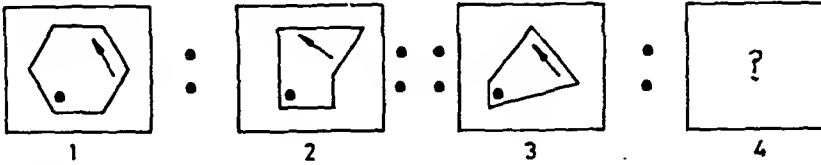


ANSWER FIGURES

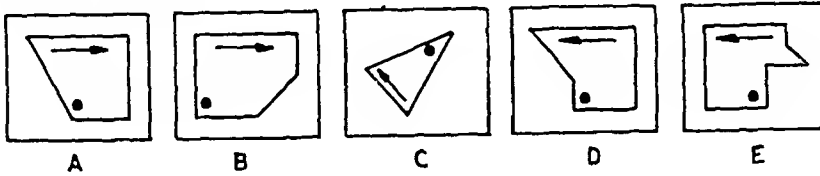


4.

PROBLEM FIGURES

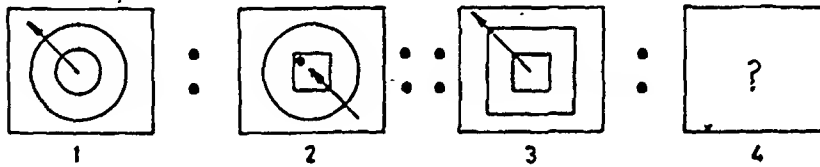


ANSWER FIGURES

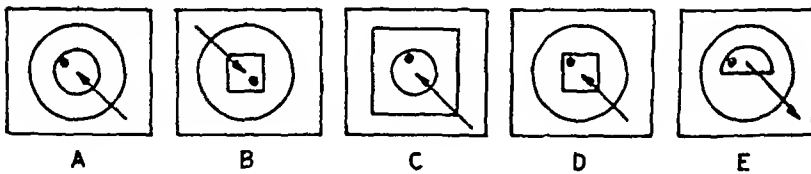


5.

PROBLEM FIGURES

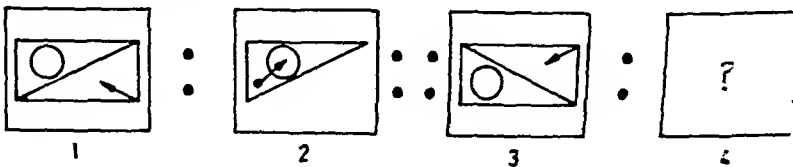


ANSWER FIGURES

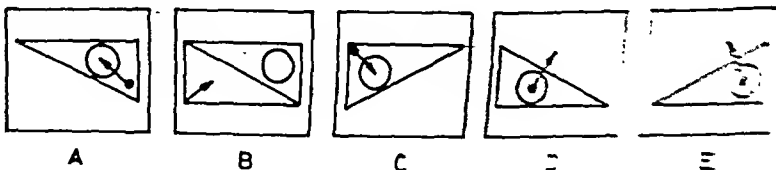


6.

PROBLEM FIGURES

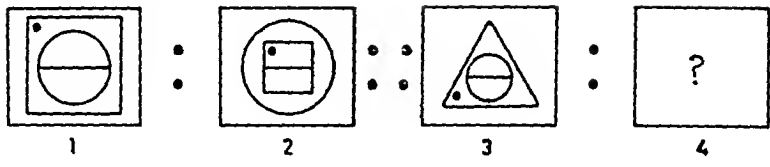


ANSWER FIGURES

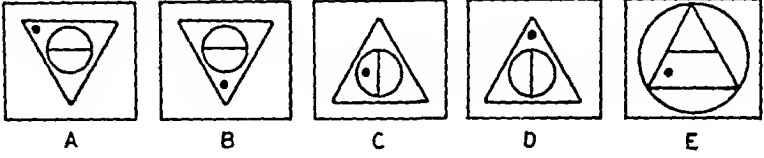


7.

PROBLEM FIGURES

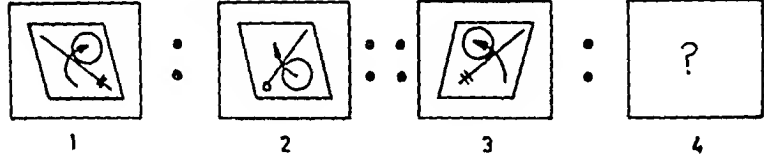


ANSWER FIGURES

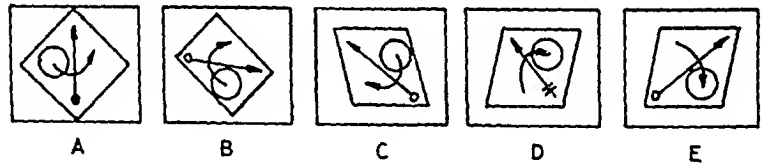


8.

PROBLEM FIGURES

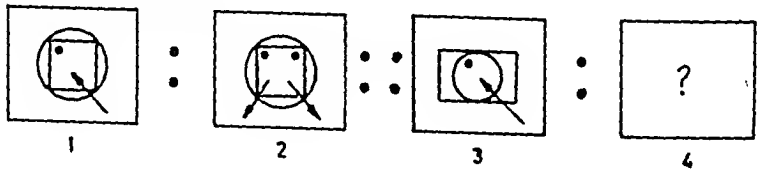


ANSWER FIGURES

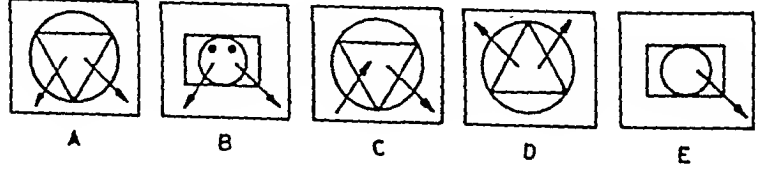


9.

PROBLEM FIGURES

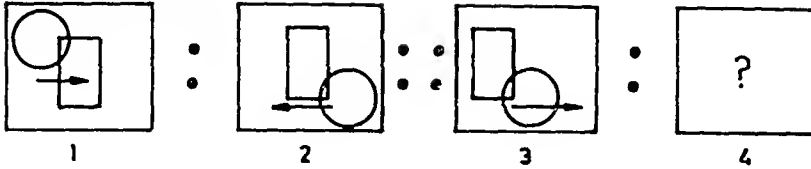


ANSWER FIGURES

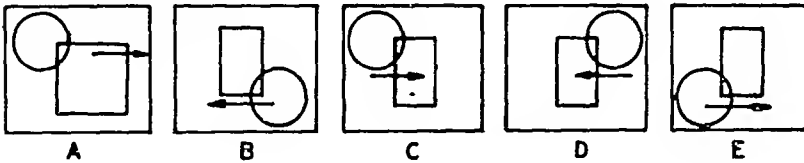


10.

PROBLEM FIGURES



ANSWER FIGURES



Answer Key

Analogical Non-verbal Tests

(1) B In first two columns you will note number of circles have increased from 1 to 2 and in the second column one of the circles is inverted. Same relation exists in figure 3 in problem figure and figure B in answer column.

(2) C Correlation is obvious. The triangle have oblonged to have same relation between figure 3 as is between figures 1 and 2 in problem figures.

(3) D Number of lines are increasing in the first two figures. In figure F lines have increase to 5 and direction of arrows also match.

(4) C In the first two figures number of lines are reducing. Based on this analogy figure C has same relationship to figure 3 in problem figure. Dot and arrows have no correlation here.

(5) C In the first two figures, you will have two circles with arrow in figure 1, and circle with square inside in figure 2. Based on this analogy C fits in blank column.

(6) A Rectangular figures reduced to angular figure from figure 1 to 2 in problem figure. Keeping in view the arrow and the circle figure A in answer column fits well in the blank column.

(7) E In Figure 1 circles go in the square and figure 2 squares go in the circle with change in the dot movement and both have horizontal line. Based on this analogy you will see figure E fits well in blank column in problem figure.

(8) C Change in direction, movement of arrows and circle in the rectangular figures is obvious in figures 1 and 2. Based on relationship, figure C relates very well to figure 3 in problem column.

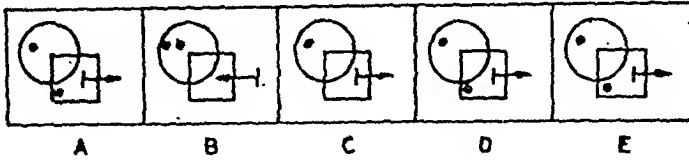
(9) B Direction of arrow and dot have relationship in figure 1 and 2 of problem figure. Based on the same analogy figure B relates to figure 4 of problem figure.

(10) D After matching figure 1 and 2 in problem figure, you will note that figure D correlates well with figure 3 in problem figure and as such fits well in blank column in problem figure. Note changing direction of circle, rectangular figure and the arrows.

6.3 Classification (Spotting The Odd One Out)

In these problems, there is generally a group of six figures marked serially 1 to 5 or A to E. Out of these six figures five are similar in some way and one is dissimilar. You to find the one which is not matching or irrelevant or is different from the others in the series.

Example

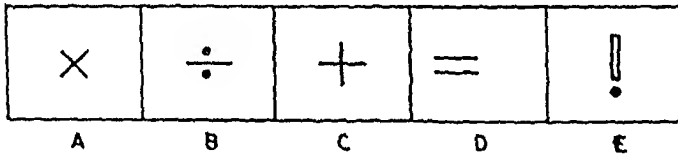


Answer : D

Explanation: The arrow changing direction and black dot inside the circle increase/decrease alternately. Hence Fig. D given above is odd. Odd-one-out tests can be categorised as follows.

QUALITATIVE TYPE

Here the diagrams have a qualitative relationship, i.e., they pertain to one particular class and the one which is different in that characteristic is to be spotted out.



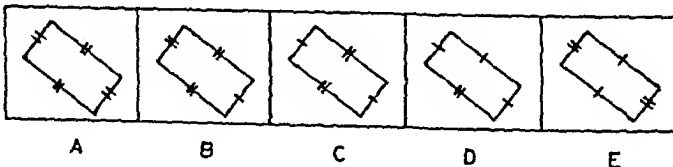
Answer: E

Explanation : In column A,B,C and D there are mathematical symbol whereas column E contains sign of exclamation which is a punctuation sign. Hence E is odd here.

QUANTITATIVE TYPE

In these diagrams the number of elements/items have a certain correlation. One of the figure does not bear that relationship.

Example

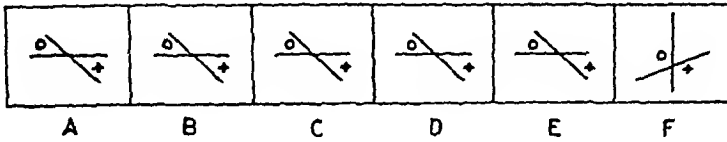


Answer: E

Explanation : Each figure contains a rectangular figure intersected by small lines. Figure A has eight lines, two each intersecting sides of the rectangular figure. In B they reduce to seven and in C to six and so on. As the number of intersecting lines are reducing by one each time, Figure E should have four lines where in the above example there are six lines intersecting the rectangular figure. Hence E is the odd-one here.

DIRECTIONAL TYPE

Here the direction of figures or their various elements have a *certain relationship* and one figure which is different from the remaining is to be spotted out.



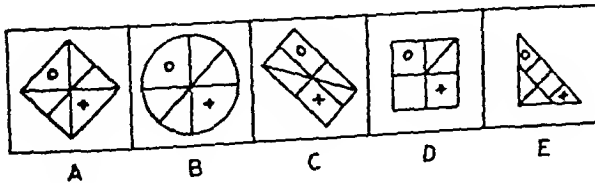
Answer : F

Explanation : In all figures there is one vertical line intersected by an inclined line. Figure F has both the lines inclined and different directions. Hence it is odd one here.

DIVISIONAL TYPE

Each figure is divided into smaller divisions or segments. These divisions or segments are in a certain order. The figure which does not follow the order is to be spotted out:

Example



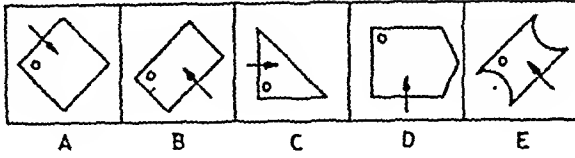
Answer : D

Explanation: The main figure in each column is divided in six parts. Figure D is divided in five parts, hence it is odd one here.

STRUCTURAL TYPE

The diagrams resemble each other in one form or the other. The figure with a difference is to be spotted out.

Example



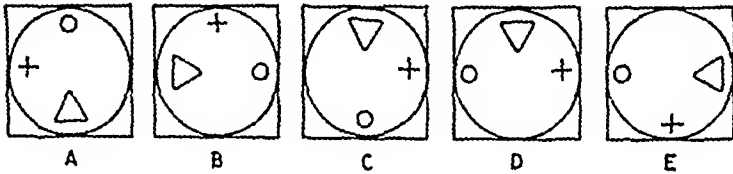
Answer : E

Explanation : All other diagrams are made of straight lines whereas E is made of curved lines as well. Hence E is odd one here.

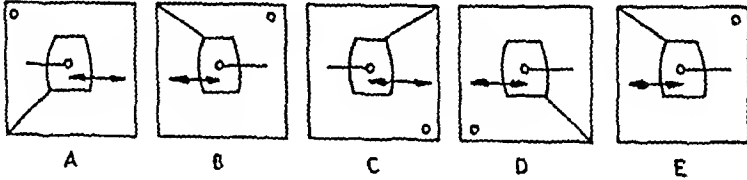
Exercise

DIRECTION: Given below is a set of five figures (a-e) Four of them resemble one another in a certain way. You have to identify the one which does not belong to the same class or different from others (odd):-

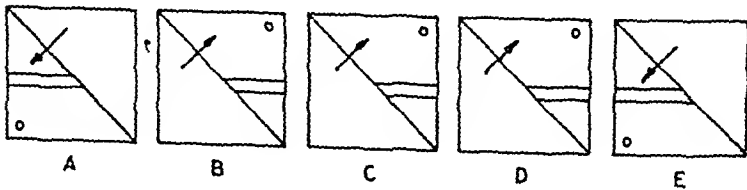
1.



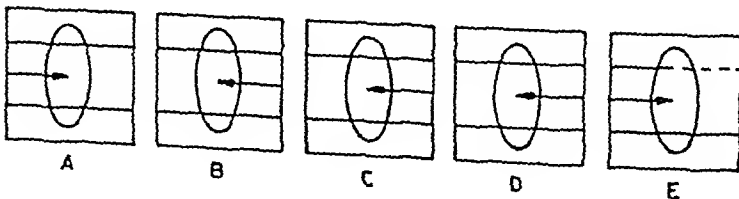
2.



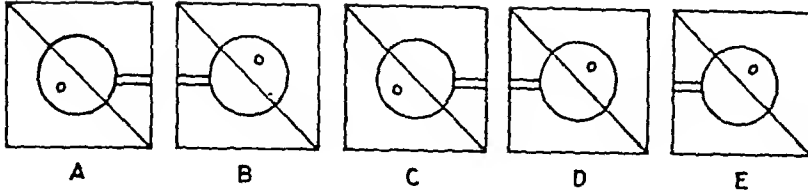
3.



4.



5.



Answers 1.(d) 2.(e) 3.(c) 4.(c) 5.(c)

Explanation

1. Scheme of the series is movement of the triangle in the circle and movement of the dot and plus sign (+) in a specific manner. Triangle's base, plus sign and dot are rotating in clockwise direction.

2. The movement of the half diagonal (one which the internal figure is hanging) is clockwise around the square. The small circle is also moving in the same way. Here to complete the series the figure (a) should have been repeated.

3. The movement of arrow and the two horizontal lines connecting with the diagonal are determining the scheme in the series. Figures (a) or (e) should have been in the place of (c) as it is alternating design scheme.

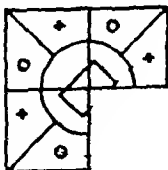
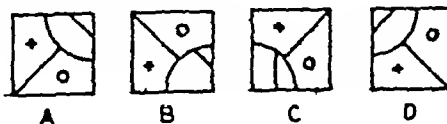
4. The movement of the arrow is changing alternately. Figure (a) or (e) should have been repeated to make series.

5. Note alternately changing position of small circle within the bigger circle and the two horizontal lines connecting the inner circle to the square. Figures (a) or (c) should have been repeated here.

6.4 Figure Completion

These are based on the Raven Progresssive Matrices Tests (1938-56). They were developed in England and used during World War II. They are non-verbal scales developed to judge your ability to comprehend correlations between geometric figures and diagrams and to perceive the structure of the design in order to select the appropriate part from amongst a number of choices for completion of each pattern.

A pattern/figure is given, a portion of which is left incomplete. A few choices in the answer figure are also given. You have to select the figure which fits into the blank space in the incomplete figure so that the original pattern is complete.

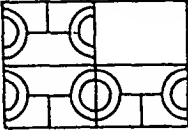
Example**PROBLEM FIGURE****ANSWER FIGURES****Answer: D**

A careful observation will reveal how D will fit in the incomplete portion of problem figure.

Exercise

1.

INCOMPLETE FIGURE



ANSWER FIGURES



A



B



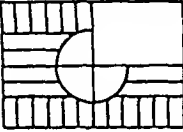
C



D

2.

INCOMPLETE FIGURE



ANSWER FIGURES



A



B



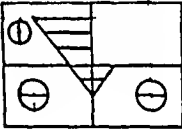
C



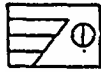
D

3.

INCOMPLETE FIGURE



ANSWER FIGURES



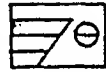
A



B



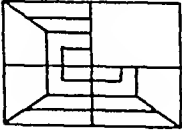
C



D

4.

INCOMPLETE FIGURE



ANSWER FIGURES



A



B



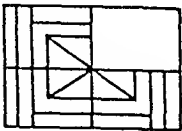
C



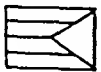
D

5.

INCOMPLETE FIGURE



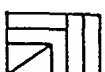
ANSWER FIGURES



A



B



C



D

Answers 1.(A) 2.(C) 3.(A) 4.(B) 5.(C)

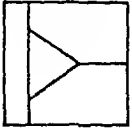
6.5 Spotting Hidden Figures

These non-verbal tests are designed to judge your sense of observation and analytical aptitude. In such questions the Problem Figure comprises just one figure. The Answer Figure contains four or five different blocks. The Answer Figure has a hidden figure of the Problem Figure which is to be spotted out.

Example

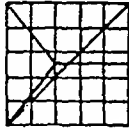
DIRECTIONS: There is a block 'X' which has the basic design. The four blocks that follow, i.e. A,B,C and D have a group of more complex figures. In one of these figures the pattern of block 'X' is hidden. You have to mark the correct choice from answer choices.

PROBLEM FIGURE

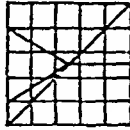


X

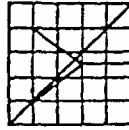
ANSWER FIGURES



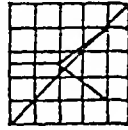
A



B



C



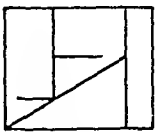
D

Answer : C

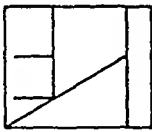
Exercise

There is one block on left hand side marked (X) which has the basic design. The four blocks that follow, i.e. A,B,C and D have a group of more complex figures in one of which the main/basic figure given left hand column (X) is hidden/embedded in some position. You have to spot out that particular figure from the choice of answers A,B,C and D.

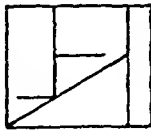
1.



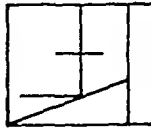
(X)



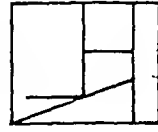
A



B

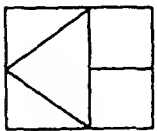


C

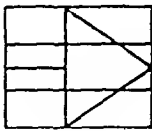


D

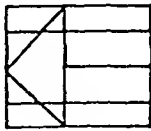
2.



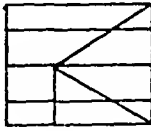
(X)



A



B



C

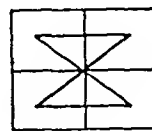


D

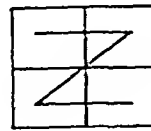
3.



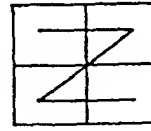
(X)



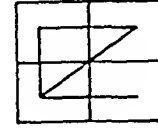
A



B

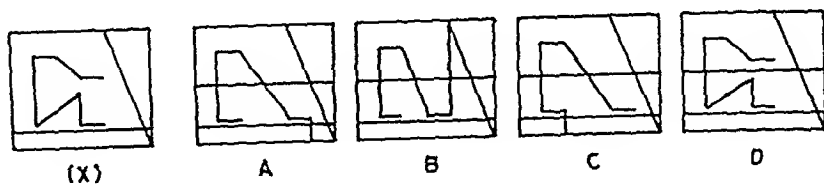


C

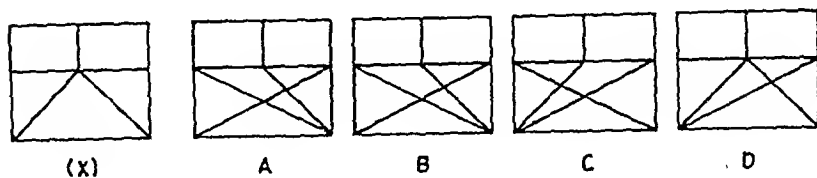


D

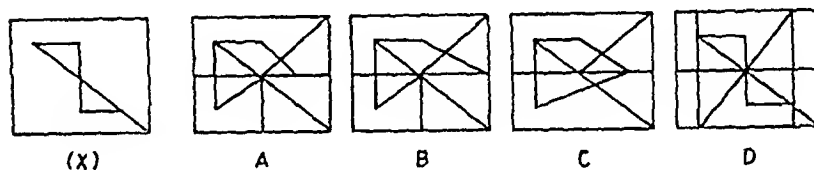
4.



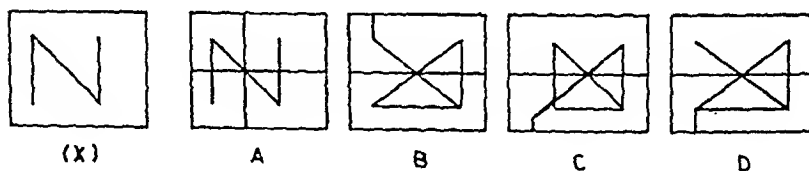
5.



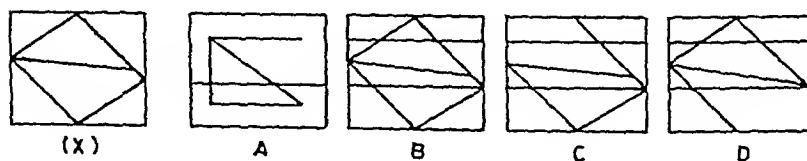
6.



7.



8.



Answer Key — Spotting Out Figures Embedded/hidden In A Bigger Diagram

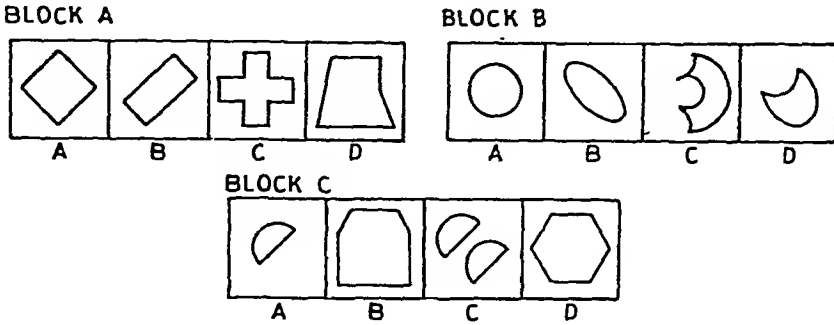
1. B 2. B 3. A 4. D 5. D 6. D 7. A and C 8. B

Explanation: In question 7, in column (X) there is figure of N. Same figure is traceable in blocks A and C. Hence the answer to be marked is A and C.

6.6 Discerning/Spotting Out the Similar Pattern

In these tests three blocks of figures marked A, B and C are given. Two figures in Block C have some similarity with the figures/pattern in Block A. In Block B there are some figures matching with Block A or having similarity/same analogy. You have to select two figures in Block C which bear similarity or are based on the same analogy as that of Block A. Block B will help you to determine the relationship between figures of Block A and C.

Example

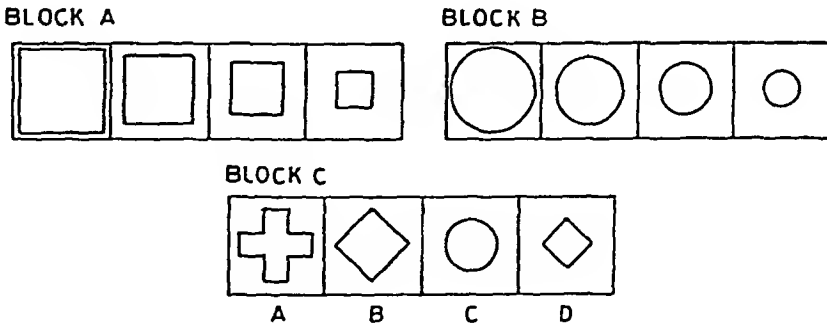


Answer : B and D

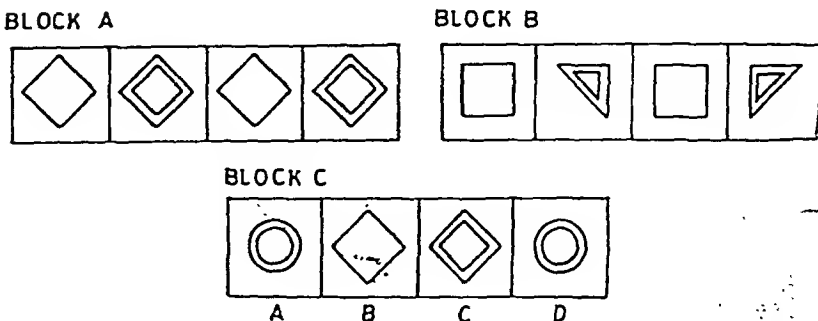
Explanation: All figures in Block A are made of straight lines whereas all figures in Block B are made of curved lines. In Block C there are two figures 'B' and 'D' which are made of straight lines. Hence figures 'B' and 'D' have similarity.

Exercise discerning/spotting Out The Similar Pattern

1.

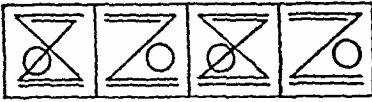


2.



3.

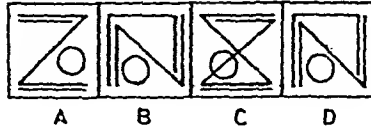
BLOCK A



BLOCK B



BLOCK C



4.

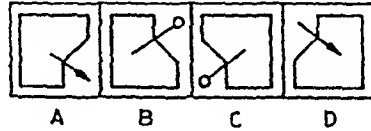
BLOCK A



BLOCK B

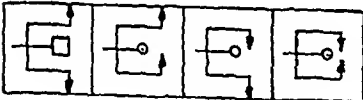


BLOCK C

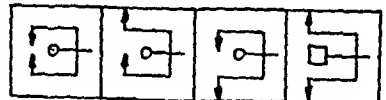


5.

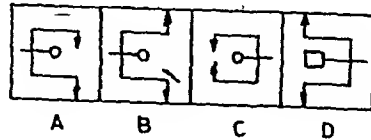
BLOCK A



BLOCK B

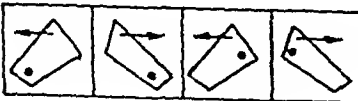


BLOCK C

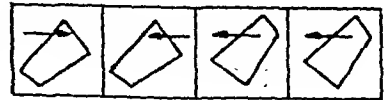


6.

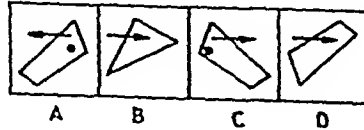
BLOCK A



BLOCK B

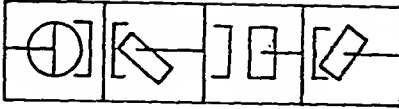


BLOCK C



7.

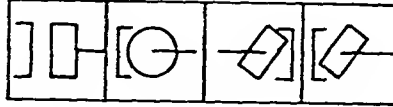
BLOCK A



BLOCK B



BLOCK C



A

B

C

D

8.

BLOCK A



BLOCK B



BLOCK C



A

B

C

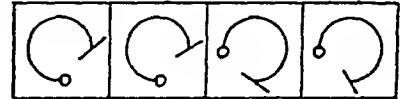
D

9.

BLOCK A



BLOCK B



BLOCK C



A

B

C

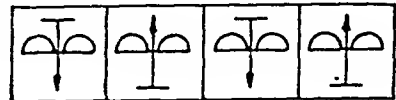
D

10.

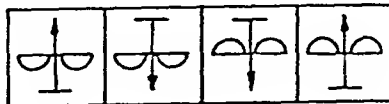
BLOCK A



BLOCK B



BLOCK C



A

B

C

D

Answer Key Discerning/spotting Out The Similar Pattern

1. B & D In block A squares becoming smaller in each figure. In block B circles are becoming smaller in size in each column. In block C, squares in columns B and D have same correlation.
2. B & C Single square is followed by double square (square in side another square). Same pattern is followed in block B but here after single square double triangles are given. In block C, figures B and C follow the pattern of block A.
3. A & C Careful observation will reveal that block C have similar figures in the same sequence in block A. Take help from block B as well.
4. A & B Direction of arrows and pins (line with circular head) has specific pattern in block A. Based on this figures A & B follow same pattern in block C.
5. A & B Answer is obvious. Figures A and B in block B follow a certain sequence which is obvious in blocks A and B.
6. A & C Keeping in view the leaning of main figures and the direction of arrows and position of dots in block A figures A & C follow same pattern in block C.
7. A & D In Block A the horizontal lines passing through all figures are touching one side of the frame. In block B these lines are not touching the frame. In block C figures A and D are touching the frame.
8. A & C In block A arrows crossing the figures are not touching the outside frame. In block B the arrows are in same direction but touching the frame. In block C figures A and C do not touch the frame and as such are having correlation with figures of block A.
9. C & D In block A, straight lines on the semicircular figures are touching one side of the frame. In block B this is not the case. In block C, figures C and D follow similar pattern as in block A.
10. B & D In block A, semicircular figures are alternatively turning upside down. Arrow follow same pattern. In block B, semicircular figures are having same direction in all the columns but the arrows are turning in alternative column. In block C, figures B and D follow the pattern of block A.

6.7 Arranging Figures in Proper Sequence/Order

In these tests five figures marked A,B,C,D and E are given. All figures have some similarity but their placement is not in order, there exists some difference in their natural sequence. You are required to arrange them in their natural sequence. You will observe there are two figures which are out of place and if their places are interchanged then all figures come in systematic order or sequence.

Example

DIRECTIONS: Name the two figures in following set of figures which are out of position/place and require interchanging of position to put the entire series in order:



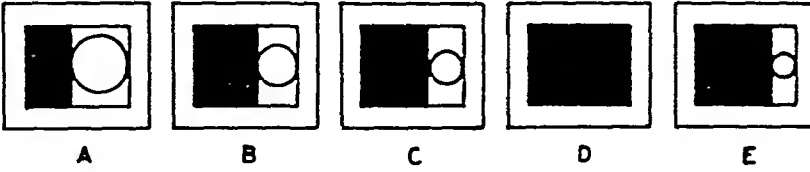
Answer : E and F

Explanation: You will note that spherical figure is getting shaded from A to D. If Fig. F is put in place of Fig. E and Fig. E in place of Fig. F, then the series will come in natural or proper order.

Exercise Arranging Figures In Proper Sequence/Order

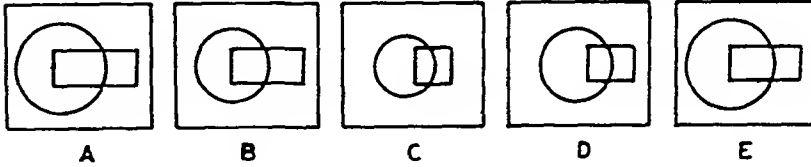
Identify the two figures in following questions which are out of position/place and require interchanging of position to put the entire serial in order.

(1)

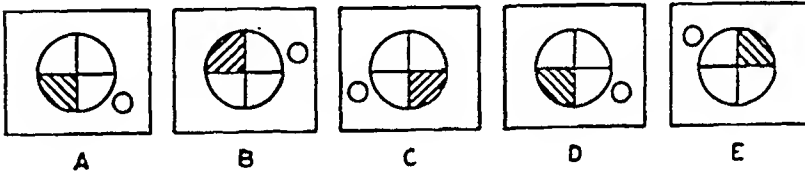


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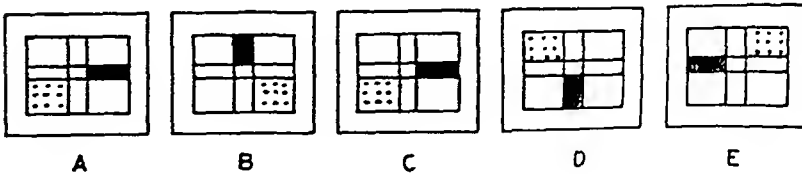
Only for 3 days
Late Fee Rs. 5/- per day



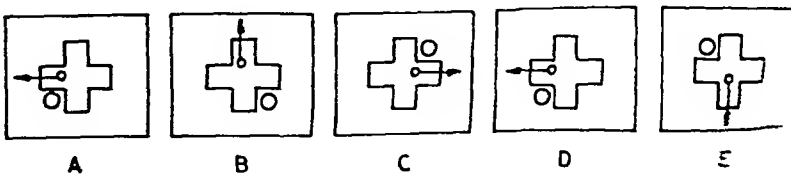
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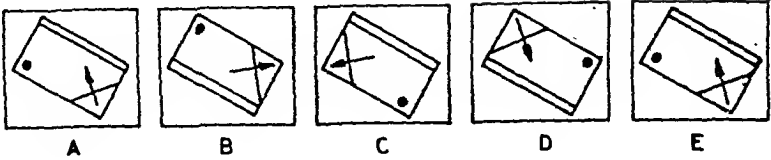
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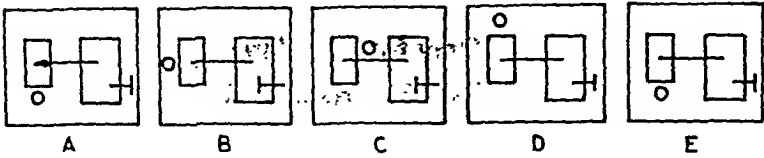
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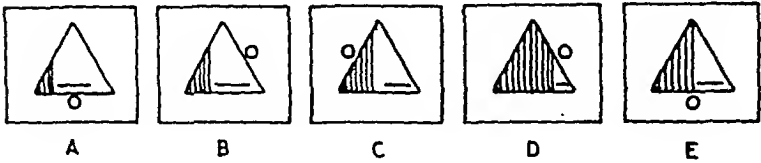
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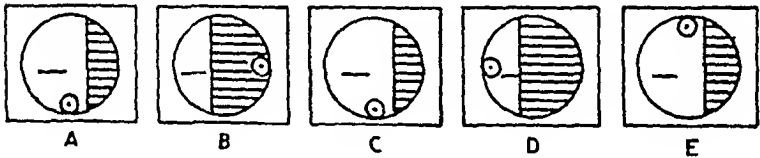
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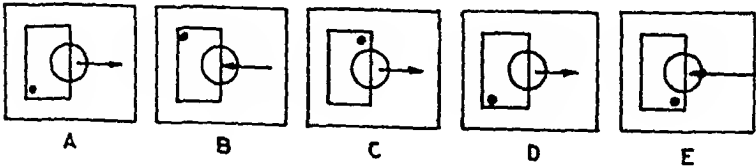
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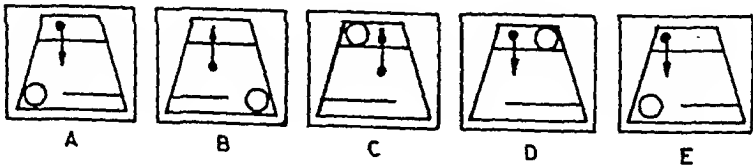
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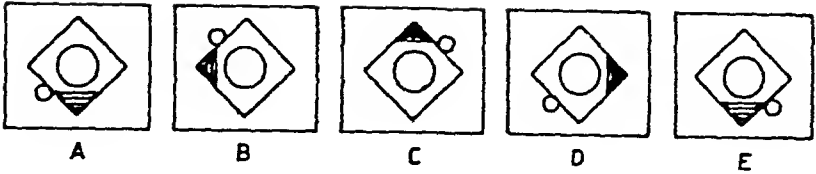
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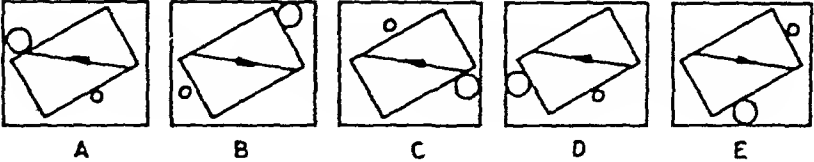
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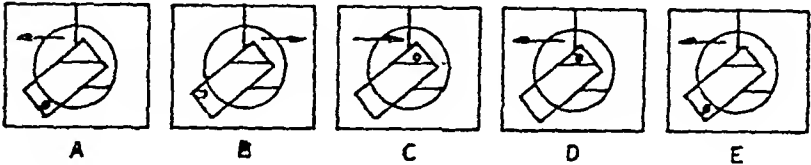
(12)



(13)



(14)



Answer Key Arranging Figures In Proper Sequence/Order

(1) Figure D should go in column E and figure E should come in column D. Because in preceding figures you will note that shaded area is increased in each subsequent figure and size of the circle is decreasing. The last column should then be completely shaded.

(2) Figures C and E interchange position. Size of circle and the relevant rectangular figures are decreasing in size in each of the following columns.

(3) Figures C, D and E interchange positions, i.e., figure E should replace figure C and figure C should go in column D and column D figure should come in the end. Reason : shaded area is moving clockwise and small circle outside moving anticlockwise.

(4) Figure C should go in column E and Figure E should go in column C. Reason : Dotted portion is moving anticlockwise and shaded column is also following same movement pattern.

(5) Figures D and E should interchange positions. Reason : Smaller circle is moving around in anticlockwise direction and the arrow is moving in clockwise direction. To make the sequence in proper order figure D should be the last figure.

(6) Figures C and D should interchange positions. Reason : Dot is moving around rectangular figure in clockwise direction. The corner of main rectangular figure is being cut following anticlockwise movement and the arrow inside the triangle thus formed is moving inward and outward alternatively.

(7) C and D should interchange. Reason : Small circle moving around rectangular figure in clockwise direction, the arrow cutting both rectangles are changing directions alternatively. Similarly small nail like figure are changing directions alternatively.

(8) D and E should interchange. Reason : Small circle outside is moving in anticlockwise direction. Shaded portion of triangle is increasing in each following figure.

(9) C and E should interchange. Reason : The small circle inside the main circle is moving in anticlockwise direction.

(10) D and E should interchange. Reason : Dot is moving in clockwise direction inside the rectangular figure. The arrow is changing direction alternatively in the circle cutting across the rectangular figure.

(11) C and D should interchange. Reason : Circle is moving from one corner to another in anticlockwise direction. The arrow is changing direction alternatively in each subsequent figure. The horizontal line across the base line of the rectangular figure is once touching left line and then right line of the vertical sides of the rectangular figure alternatively.

(12) D and E should interchange. Small circle is moving across in clockwise direction. The shaded column is moving also along with circle in clockwise direction.

(13) D and E should interchange. Note movement of large circle outside is in clockwise direction. Same pattern is followed by smaller circle. The direction horizontal line changing alternatively.

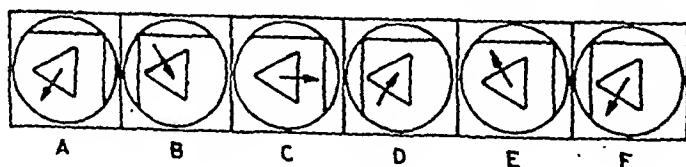
(14) C and D should interchange. Reason : Dot in rectangular figure is moving clockwise. The arrow is changing direction alternatively.

PRACTICE TESTS NON VERBAL

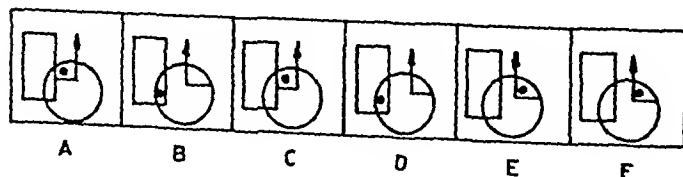
ODD-MAN OUT (Finding the stranger-odd-man)

Find the odd man/stranger among the following set of figures:

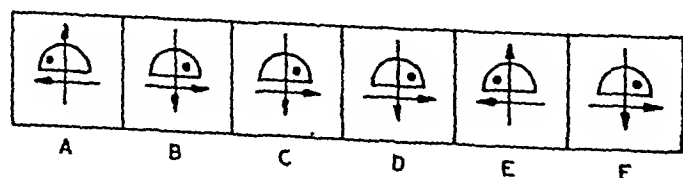
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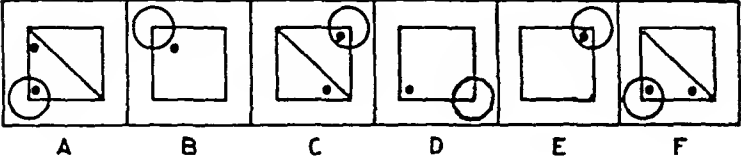
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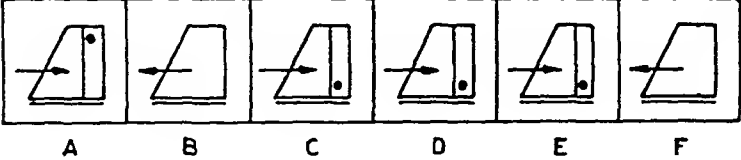
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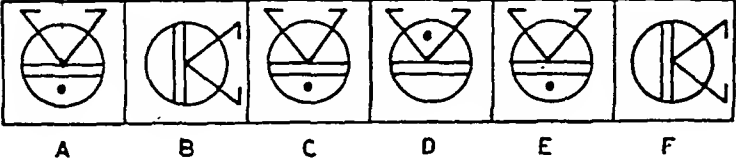
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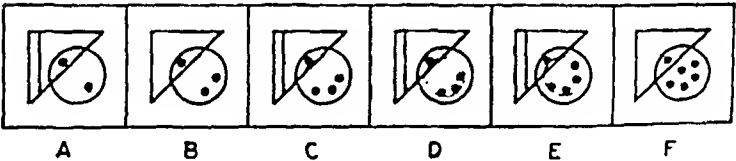
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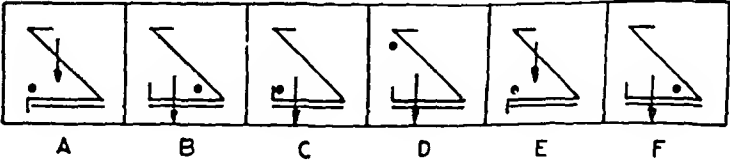
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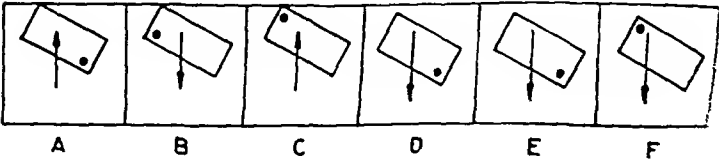
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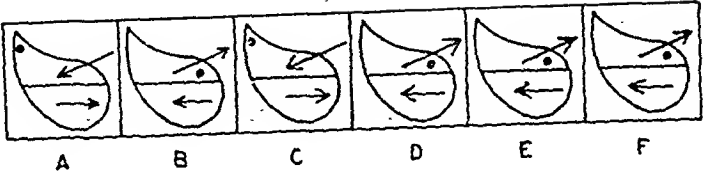
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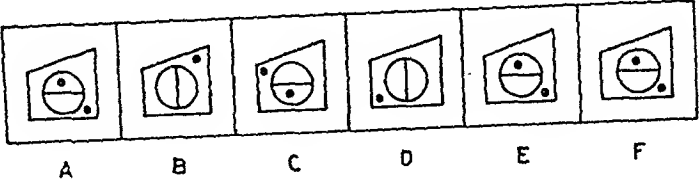
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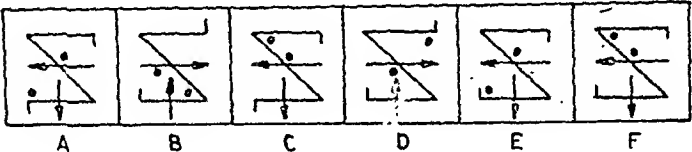
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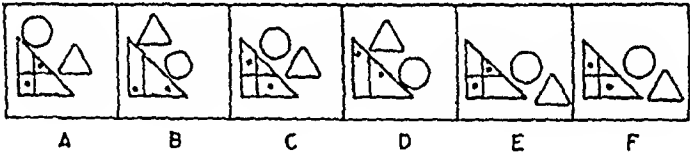
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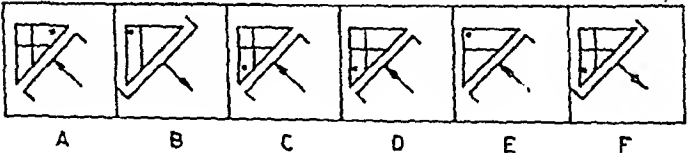
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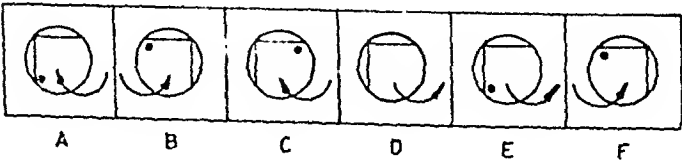
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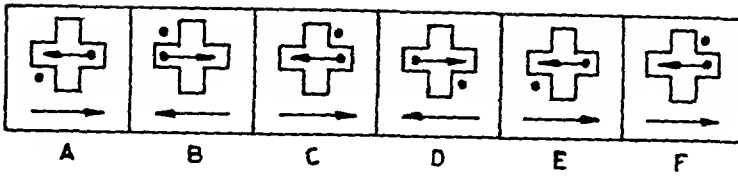
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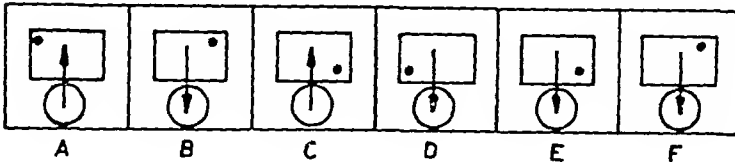
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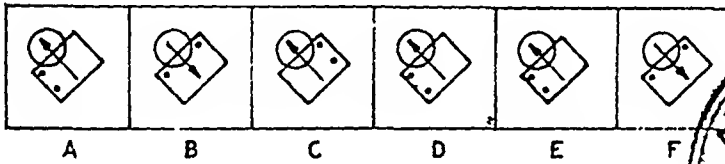
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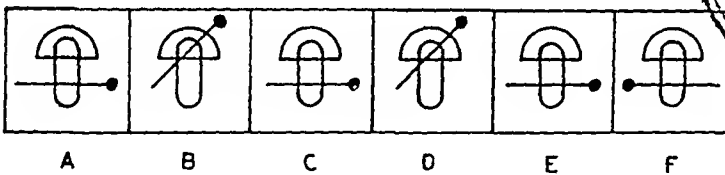
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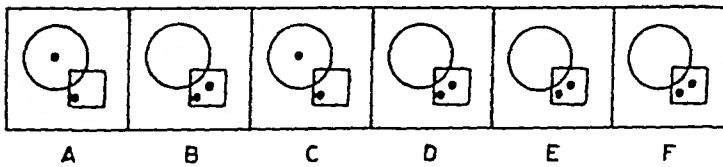
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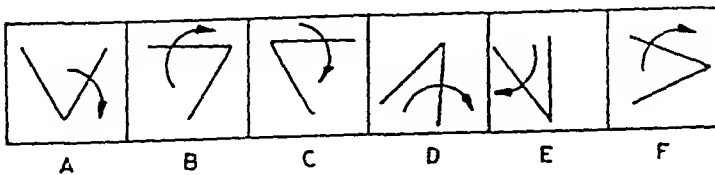


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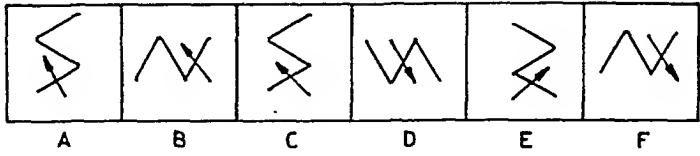


The following figures bear some sort of similarity to one another, which differs from others in some respect. You have to spot out the strange odd figure:-

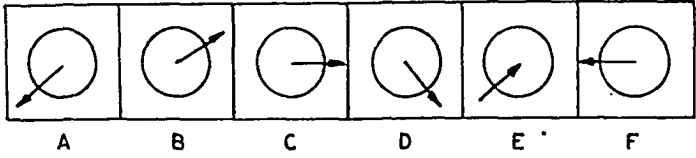
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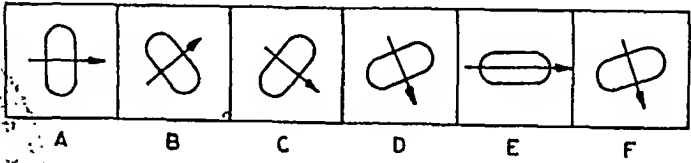
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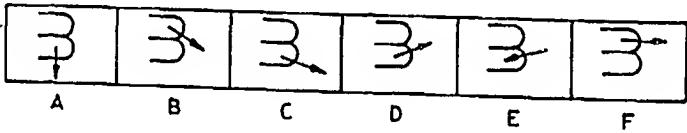
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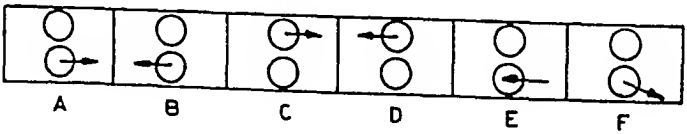
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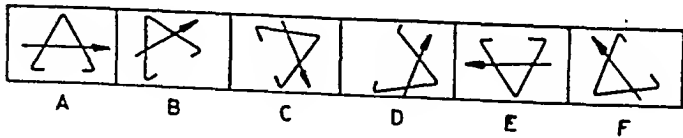
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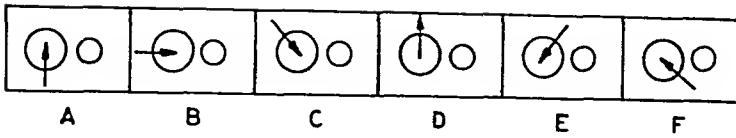
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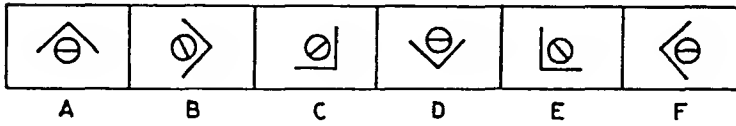
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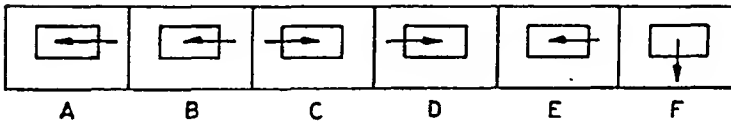
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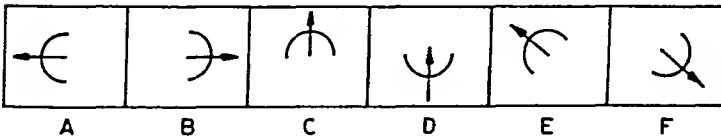
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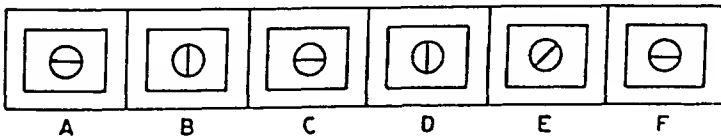
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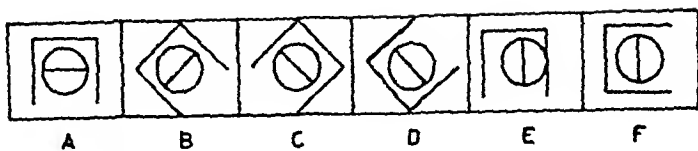
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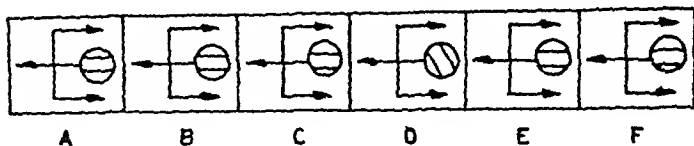
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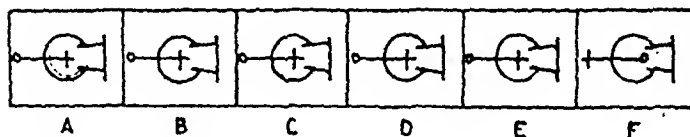
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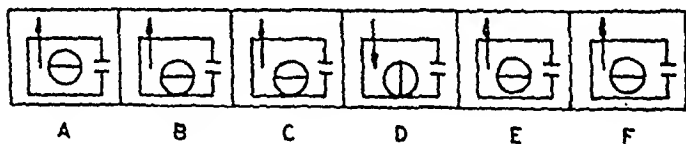
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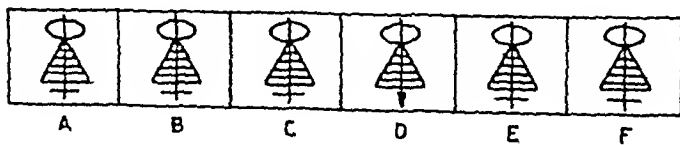
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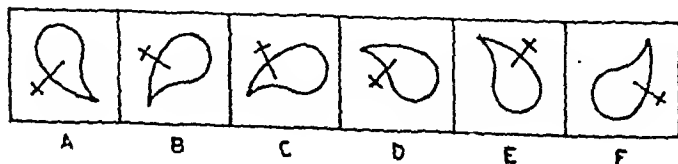
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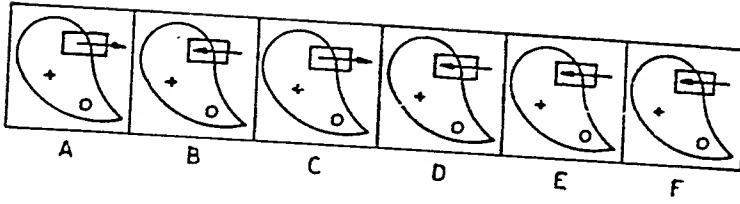
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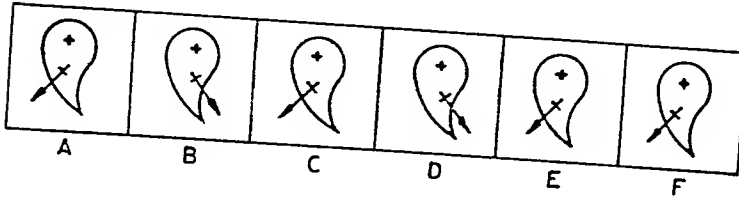
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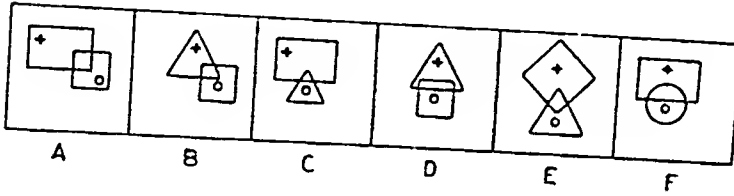
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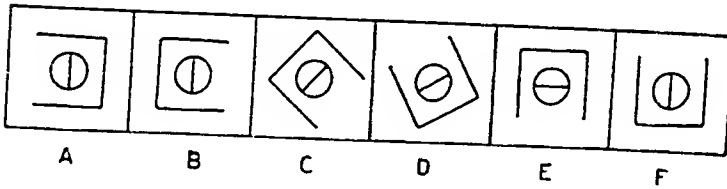
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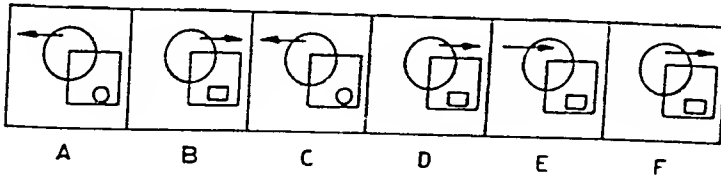
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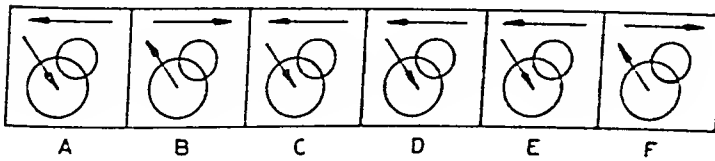
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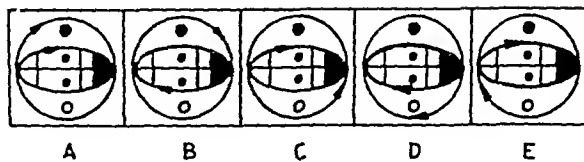
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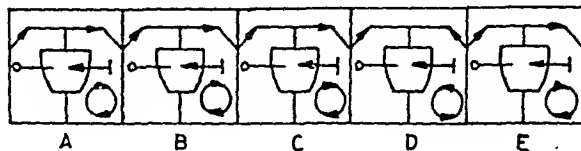
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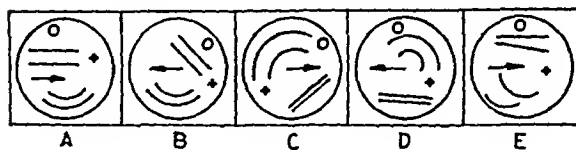
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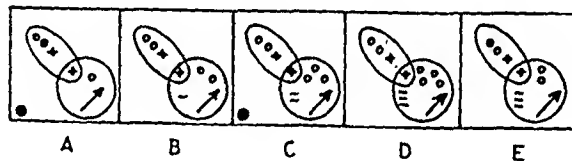
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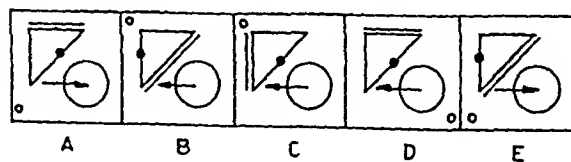
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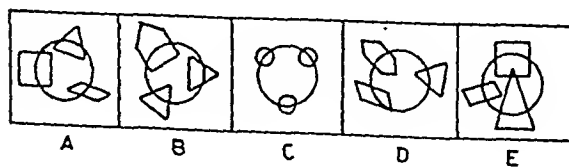
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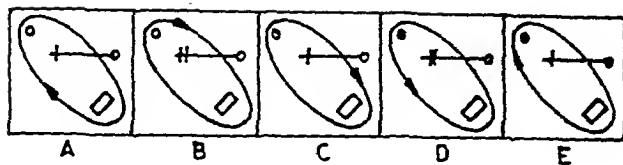
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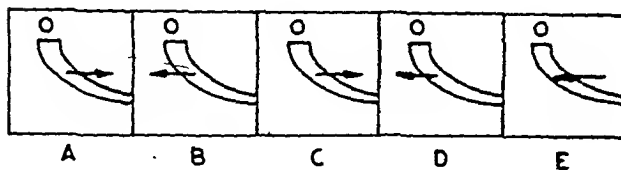
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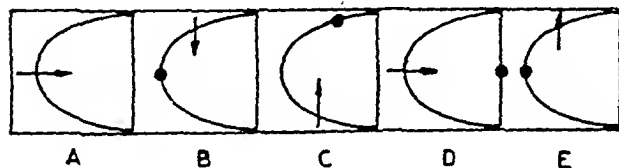
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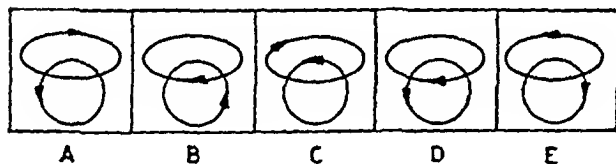
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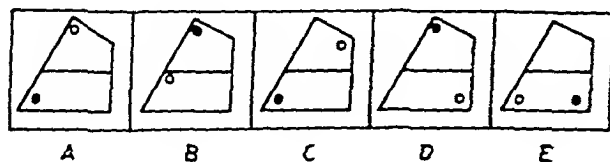
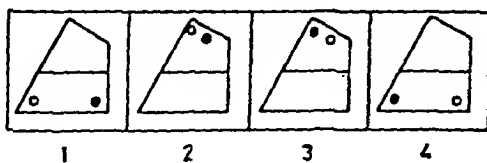


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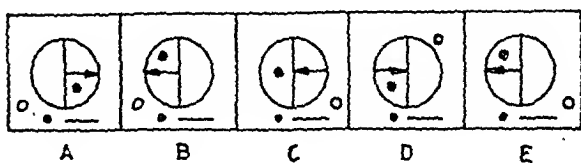
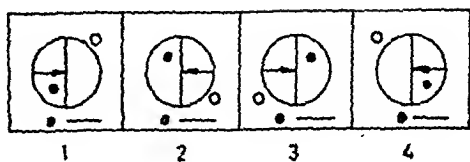


SERIES COMPLETION

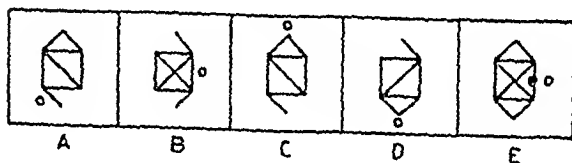
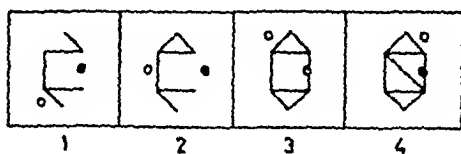
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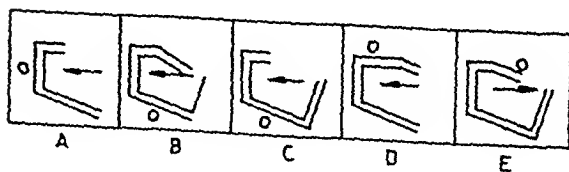
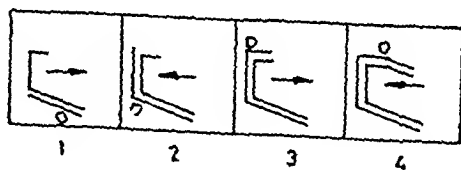
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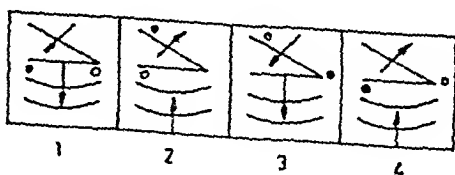
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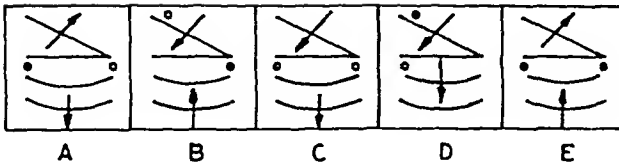


(59)



(60)



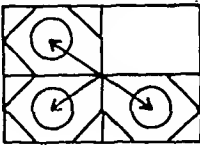


COMPLETING A FIGURE

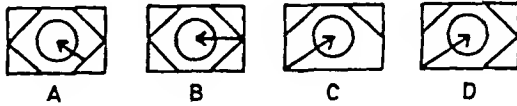
In the following tests you will find an **INCOMPLETE** figure and four **ANSWER** **PATTERNS**. You have to select one diagram from the **ANSWER** **PATTERN** which fits into the blank column in **INCOMPLETE** **FIGURE** in order to complete it:-

(61)

INCOMPLETE FIGURE

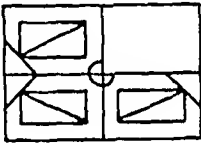


ANSWER FIGURES

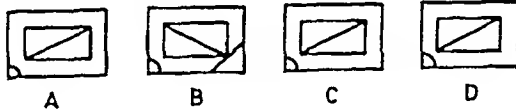


(62)

INCOMPLETE FIGURE

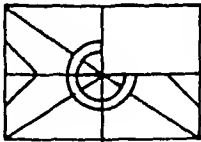


ANSWER FIGURES

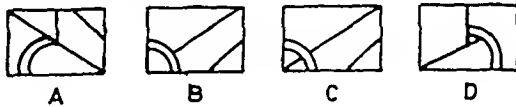


(63)

INCOMPLETE FIGURE

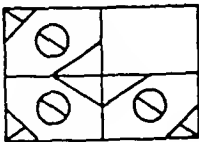


ANSWER FIGURES

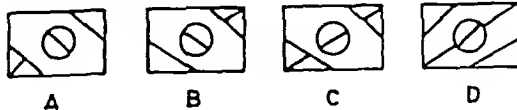


(64)

INCOMPLETE FIGURE

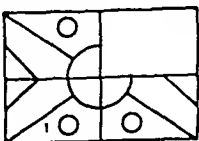


ANSWER FIGURES

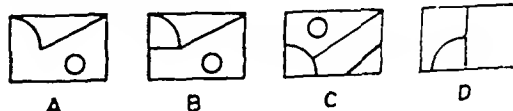


(65)

INCOMPLETE FIGURE

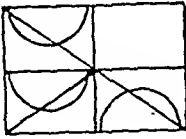


ANSWER FIGURES



(66)

INCOMPLETE FIGURE



ANSWER FIGURES



A



B



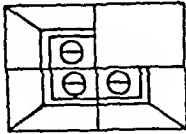
C



D

(67)

INCOMPLETE FIGURE



ANSWER FIGURES



A



B



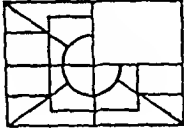
C



D

(68)

INCOMPLETE FIGURE



ANSWER FIGURES



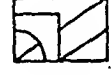
A



B



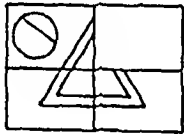
C



D

(69)

INCOMPLETE FIGURE



ANSWER FIGURES



A



B



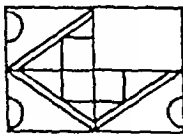
C



D

(70)

INCOMPLETE FIGURE



ANSWER FIGURES



A



B



C

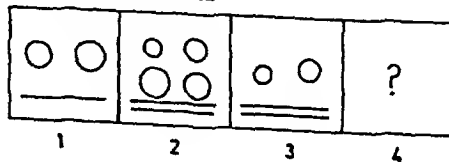


D

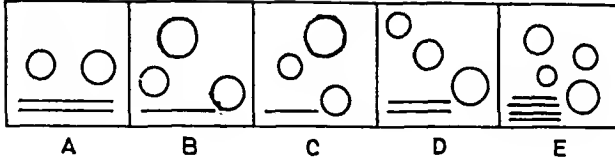
Analogy: Select appropriate Answer Figure from choices A-E to fill in blank column (4) in Problem Figure.

(71)

PROBLEM FIGURE

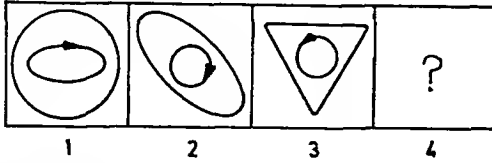


ANSWER FIGURE

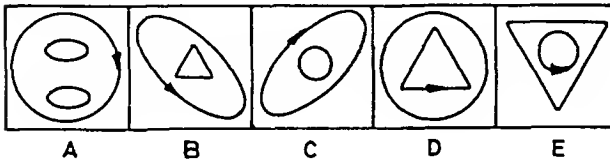


(72)

PROBLEM FIGURE

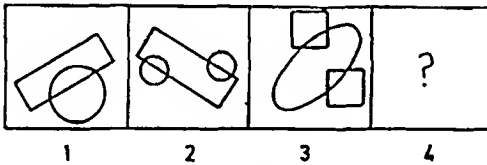


ANSWER FIGURE

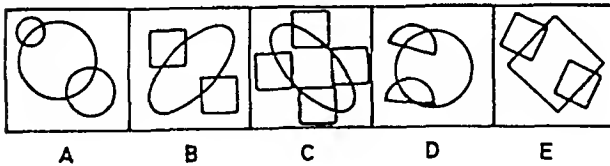


(73)

PROBLEM FIGURE

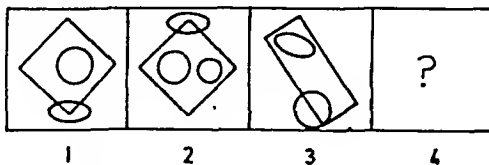


ANSWER FIGURES

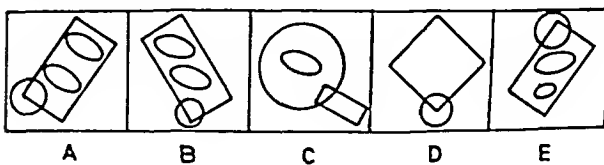


(74)

PROBLEM FIGURE

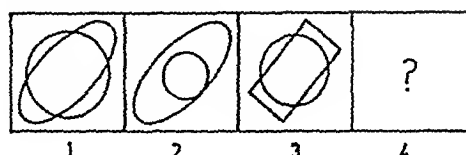


ANSWER FIGURE

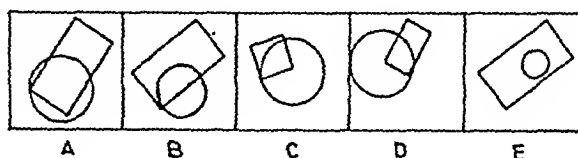


(75)

PROBLEM FIGURE



ANSWER FIGURE

**Answer Key****Odd Man Out Tests**

(1) F - Note direction of arrow in the triangle and lines on the sides of the circle. Following pattern of preceding figures figure F is odd one.

(2) F - Note movement of dot. Figure F does not follow the pattern and as such is odd in the series.

(3) C - There is a regular pattern in the movement of dots and changing of direction of the arrows. Based on the preceding sequence figure C is odd amongst other figures.

(4) E - There is a regular pattern of : movement of circle across the square, movement of dots and increase/decrease in number of dots, and also the line in the centre of the square. Based on this pattern, figure E is stranger/odd one.

(5) D - Movement of dots up and down, direction of arrows differ each time and movement of vertical line on the base of the figure changes inside and outside. Based on the pattern in preceding and following figures, diagram D is odd here.

(6) D - Note movement of two lines inside circle (one horizontal and then second vertical) movement of dot in alternate figures, and the movement of open triangle around the circle. Based on these parameters, figure D is odd here.

(7) D - Number of dots in the circular portion outside the triangle is increasing. Double vertical line is in first figure (a) and then appears in alternate figure (c). Based on this D is odd here.

(8) C - Note direction of arrow, movement of dot around the main figure and outward opening of open triangular diagram (main figure) is also following a set pattern. Based on these characteristics, figure C is stranger here.

(9) E - Here note direction of arrow and movement of dots. In all dots are moving clockwise and arrow alternatively pointing inside and outside. Based on these characteristics, figure E is odd here.

(10) E - There is specific pattern of directions of arrows on the top and bottom part of the main figure and also in the movement of the dot above horizontal line in the main figure. Based on this pattern, figure E is out and odd one.

(11) F - The dot outside the circle is moving anti-clockwise around the corners of the main figure. The circle in the centre and its horizontal line is also changing, from horizontal in the figure to vertical in the subsequent one. The figure having

horizontal line has a dot which is alternatively moving up and down. Based on this figure F is out/stranger.

(12). F - Note changing directions of arrows in specific pattern. Two dots moving around the main figure in a specific pattern. The ends of the main figures are also opening and closing in different directions but following a specific pattern. Figure F does not follow the pattern set in the preceding figures.

(13). F - Movement of small circle and small triangle around the main triangle follow a set pattern. Division of triangle and the placement of dots inside also have a set pattern which is not maintained in figure F. Hence it is odd as compared to its preceding figures.

(14). D - Here the points to be noted are : Direction of arrows, designs at the ends of the line across the triangle on the righthand side, division of triangle and placement of dot in the division. All these follow a set pattern which is followed in figure D

(15). D - Points to note are : direction of arrow in the circle, two lines on the side of the circle. The pattern is not followed by figure D, which is odd here.

(16). F - The direction of arrows both outside and inside the main figure have set pattern (alternative pointing). The dot outside the main figure also revolves in a set order, which is not followed by F. Hence F is odd man out here.

(17). E - Here also the dot in the rectangular figure and the direction of the arrow alternatively once inside the rectangular figure and the circle follow a specific sequence not maintained by figure E, which is stranger in this series.

(18). D - Based on the above analogy. Movement of arrow is similar to one shown in question 17 and also the dot. But here number of dots are two in each figure. Figure D does not follow the pattern of preceding and following figures and as such is odd in this series.

(19). F - Here only the direction and movement of line with dot (Pin like figure) is to be noted. The pattern followed by figures preceding to figure F is not followed here and as such this is stranger/odd figure in this series.

(20). E - Note the first figure, having a circle and a square, each having a dot inside. In second figure the dot from the circle moves to the square and again the third figure it moves inside the circle, i.e. taking shape of the first figure A. Figure E does follow the pattern of preceding figures and as such it is odd.

(21) C - All arrows are pointing outside the triangles, except in figure C.

(22). F - All arrows are pointing inside one of the two triangles, except figure F.

(23). E - Only in figure E is the arrow pointing inside the circle.

(24). E - The arrow in this figure is parallel to the longer lines of the design whereas other arrows are cutting across diagonally.

(25). E - All arrows are pointing outward whereas in figure F, the arrow is pointing inside the circular direction.

(26). F - The arrow should be pointing towards left in order to meet with other figures.

(27). D - All angles are closing inside except D in which one line is opening outside.

(28). D - Only in this figure the arrow is pointing inside the circle

(29). F - Direction of the line in the circle is not following the set pattern

(30). F - Only in this figure is the arrow pointing outside

(31). D - Only in this figure is the line inside the circle vertical: All other lines are horizontal.

(32). D - Only in this figure is the arrow inside the semi-circle.

(33). E - All lines in the circles in other figures are either vertical or horizontal, except in figure E.

(34). E - Line in the circle in all figures is parallel to the base of the outer figure, except in figure E where it is parallel to the sides of the outer figure.

(35). D - The two lines inside the circle are oblique.

(36). F - the direction of the cross is to be noted in all figures. In figure F, it is pointing outside the circle.

(37). D - Note the direction of the arrow and the line inside the circle. In figure D, the arrow is inside and the circle is horizontal.

(38). D - The cross becomes an arrow in figure D.

(39). D - The cross is on the concave side in figure D, and in the other figures on the convex side.

(40). E - The arrow should point towards the right. In A it points to the right side and in B towards left. The same sequence should follow, and therefore, in figure E, the arrow should be pointing in the opposite direction.

(41). F - The arrow should point in the opposite direction, i.e., towards right, based on the same sequence as in figure 20.

(42). F - Only figure containing a circle.

(43). F - The line inside the circle is parallel to the outer two lines whereas in other figure it is parallel to the base or bottom line of the outer figure.

(44). E - The arrow should point towards the left.

(45). D - The arrows are changing directions alternatively. Based on this sequence, Column D should figure similar to columns B or F.

(46). C - The outer circle is moving clockwise in all figures except in C where it is moving anticlockwise.

(47). D - Movement of top line in all figures is from left to right. The small circle is rotating clockwise. In figure D, opposite motions have been shown.

(48). E - All figures contain parallel lines, except E.

(49). E - From A to D number of small circles within the large circle are increasing one by one. The black dot is moving from one corner to the opposite alternately. Figure E does not maintain this sequence.

(50). C - Movement of small circle around the square is clockwise. The arrow turns direction alternately. The black dot is also moving clockwise. In Fig. C there is difference.

(51). C - The intersecting figures are made of straight lines.

(52). D - All spherical figures are moving clockwise, except in D.

(53). E - The arrow is alternately changing direction.

(54). E - All arrows are pointing inside and the black dot is moving clockwise.

(55). E - All circles are moving anticlockwise and intersecting spheres are moving clockwise. In Fig. E directions are changed.

(56). E - The black dot is rotating anticlockwise and small circle is rotating clockwise.

(57). D - The arrow is turning alternately. Small circle moving anticlockwise around the circle and the black dot inside is rotating clockwise.

(58). E - Small circle is turning clockwise and number of lines making the main figure inside the columns is increasing.

(59). E - The small circle is rotating clockwise and number of lines is increasing.

(60). D - The arrows are changing direction alternately and the black dot and small circle are moving clockwise.

(61). D

(62). B

(63). C

(64). B

(65). C

(66). A

(67). C

(68). B

(69). D

(70). B

(71). E - In Fig. 1 there are two circles and one line. In Fig. 2 circles and line doubles. Since in Fig. 3 there are two circles and two lines, they should double in next column.

(72). D - The inner figure becomes outer figure in Figures 1 and 2. Since in Fig. 3 outer figure is a triangle and inner figure is a circle, in Fig. 4 the triangle should become inner figure and circle should become outer figure.

(73). C - In Fig. 1 one circle intersects the rectangular figure. In Fig. 2 number of circles increases to two. Since in Fig. 3 there are two intersecting squares, they should increase to four in Fig. 4.

(74). E - Inner circle increases in number from Fig. 1 and Fig. 2. Since in Fig. 3 there is one spherical figure in the rectangular figure, in Fig. number of spherical figures should also increase.

(75). E - Outer circle becomes inner circle.

Section Seven

QUANTITATIVE APTITUDE AND DATA INTERPRETATION

This forms a part of verbal reasoning which requires the ability to reason with numbers and diagrams containing numbers. You will need to be able to calculate rapidly.

In case you are weak in arithmetic, you will have to read a basic arithmetic text book and brush up these calculation skills :

- Addition

- Subtraction

- Multiplication

- Division

- Calculation of percentages

- Calculation of averages

If you attempt the tests and find yourself slowing down or getting stuck at any point of the calculation, you should identify the type of calculation that is giving you a problem and practice that type, using a basic arithmetic text.

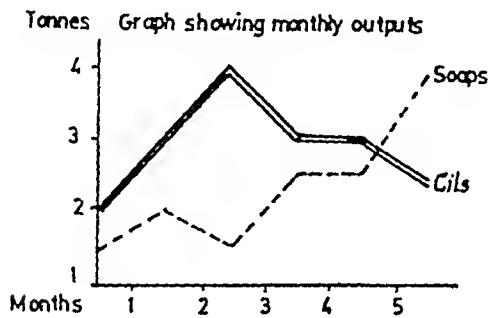
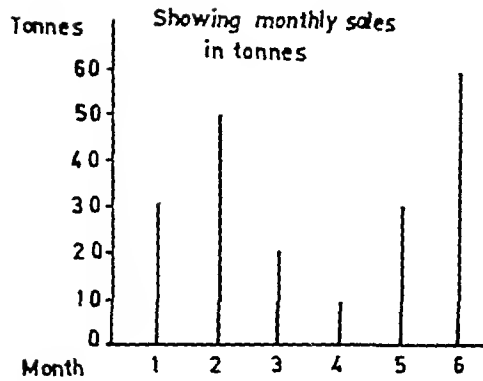
7.1 Graphs

Graphs illustrate comparisons and trends in statistical information. The fundamental concept of graphs is that they all use some distance or area to represent a value, quantity or percentage. The distance may be length, width, etc., and the value or quantity may be rupee, tonnes, etc. The graphs are always labelled to show which part of the graph represents what value. Therefore, read very carefully the labels, index, margins and notes, given along with the graphs.

The most commonly used graphs are listed here.

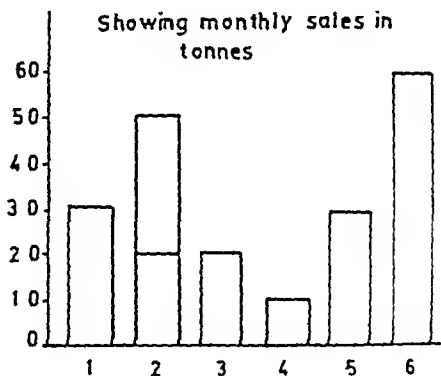
Line Graphs

Line graphs are used to show trends over a period of time. A line graph may include more than one line, with each line representing a different item, as seen in the graphs below.



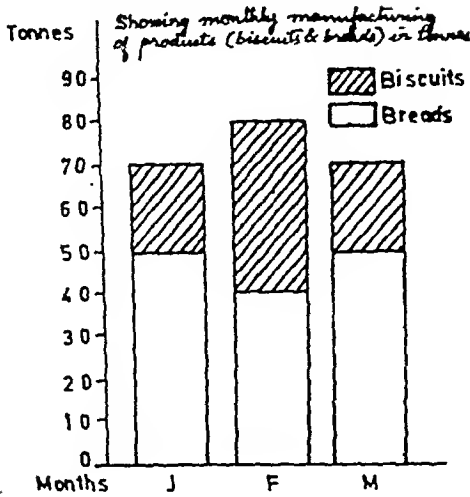
Bar Graphs

These are used to compare various quantities. Each bar may represent a single quantity (Fig. VII.2), or may be divided to represent several quantities or sub-divide bars, or double-bar diagram, as in the diagrams below.

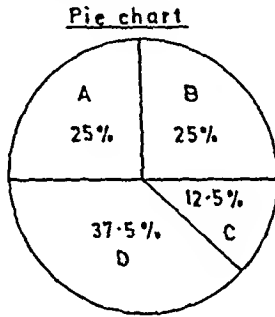


Circle or Pie Graphs

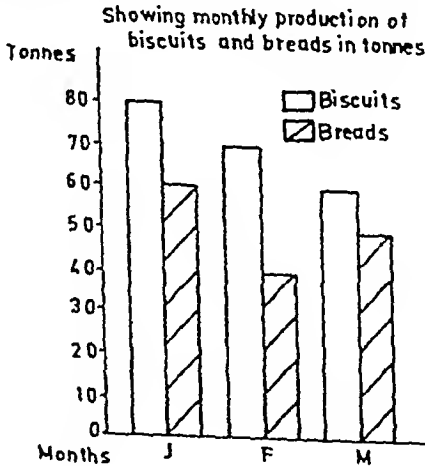
Circle graphs are used to show the relationship of various parts of a quantity to each other and to the whole quantity. Percentages are often used in these graphs. The



360 degrees of the circle represents 100 percent. Each part of the circle graph is called a sector. See the figures below.

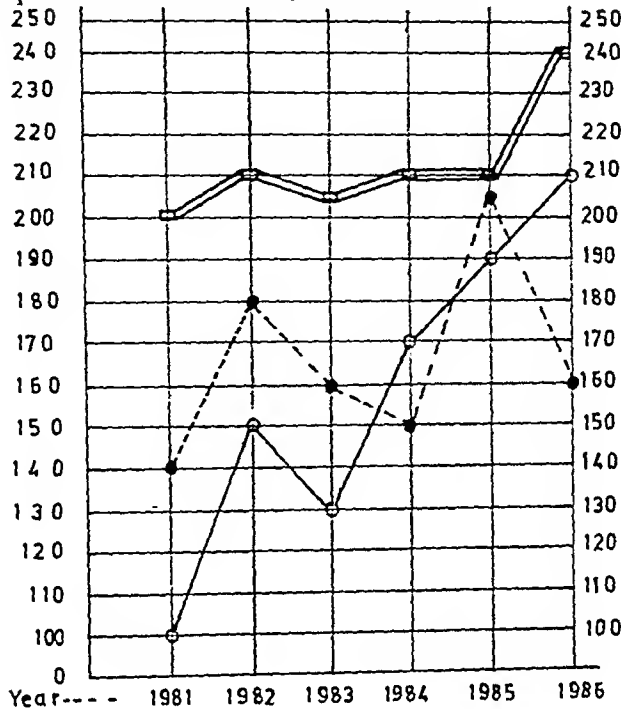


Various types of quantitative aptitude tests based on these types of graphs are given below, and one followed by practice tests.



Example 1

Study the graph below and answer questions 1 to 8.



GRAPH SHOWING PRODUCTION VOLUMES, COST OF PRODUCTION AND SELLING INCOME OF A MANUFACTURING UNIT FROM 1981 TO 1986

- In which year was the tonnage output lowest but turnover in rupees the maximum?
 - 1985
 - 1984
 - 1983
 - 1986
- In which year maximum profit was generated vis-a-vis inputs used?
 - 1982
 - 1983
 - 1981
 - 1985
- Which of the following years had the maximum negative growth in tonnage as compared to its earlier years?
 - 1984
 - 1982
 - 1983
 - 1985
- Which year registered maximum growth in tonnage turnover?
 - 1982
 - 1984
 - 1986
 - 1985
- In which year were the gross sales proceeds the highest?
 - 1984
 - 1986
 - 1985
 - 1983
- Calculate gross profit in rupees gained during 1982?
 - Rs. 27,000
 - Rs. 10,800
 - Rs. 37,800
 - Rs. 15,000

7. Calculate the difference in the manufacturing cost of 1986 and 1981 production volumes.

(a) Rs. 18,000

(b) Rs. 19,600

(c) Rs. 19,000

(d) Rs. 19,060

8. Which year was the least profitable from the fiscal point of view?

(a) 1984

(b) 1986

(c) 1983

(d) 1985

Answers With Explanations

1. (d) In 1986 output was only 160 tonnes but due to higher selling price of Rs. 240 per tonne, the turnover in rupees was maximum (Rs. 38,400) as compared to previous years.

2. (e) In 1981 the difference between selling price per tonne (Rs. 200/-) and manufacturing cost per tonne (Rs. 100/-) was the highest.

3. (e) In 1982 output was 180 tonnes but in 1983 it was reduced to 160 tonnes. Hence minus 20 tonnes growth.

4. (d) Maximum growth in tonnage. Plus 50 tonnes, 210 tonnes in 1985 compared with 150 tonnes of 1984 = 50 tonnes plus.

5. (c) 1985. 200 tonnes sold @Rs. 210/tonnes = Rs. 42,000, ever highest sales turnover in rupees.

6. (b) Total output = 180 tonnes

Manufacturing cost Rs. 150/tonnes = $180 \times 150 = 27,000$ (a)

Sold @Rs. 210/tonne = $180 \times 210 = 37,800$ (b)

b - a = income. Rs. 37,800 - Rs. 27,000 = Rs. 10,800

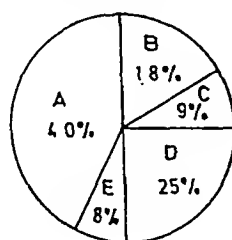
7. (b) In 1981 volume of 140 tonnes manufactured @ Rs. 100/tonne = 14,000

In 1986 volume of 160 tonnes manufactured @ Rs. 210/tonne = 33,600

Difference $33,600 - 14,000 = \text{Rs. } 19,600$

8. (d) 1985. Volume produced was no doubt maximum (200 t) but the difference between cost of production (Rs 190 per tonne) and selling price of Rs. 210 per tonne was minimum = + Rs. 20 only

Example II



A = Canteen expenses
 B = Recreation and entertainment
 C = Health and accidents
 D = Social security and insurance
 E = Contingencies

Graph showing labour and amenities cost budget of Rs. 300.4 lac and percentage of various allocations.

Answer the following questions:

1. How much money is actually ear-marked for recreation and entertainment expenses?

(a) Rs. 5.4 lac

(b) Rs. 54 lac

(c) Rs. 45 lac

(d) None of these

2. How much money is ear-marked for health and social security?

(a) Rs. 120 lac

(b) Rs. 102 lac

(c) Rs. 125 lac

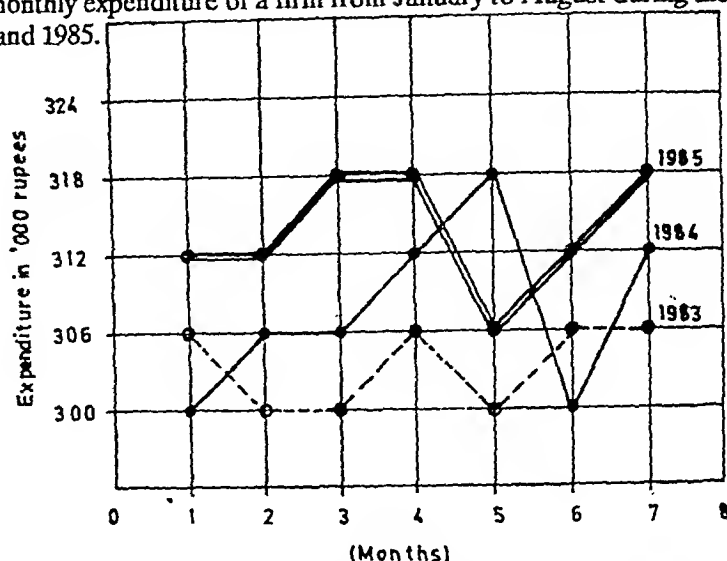
(d) Rs. 75 lac

3. If there is a 10% inflation during the year, how much money would have been spent on canteen expenses?
- (a) Rs. 330 lac (b) Rs. 120 lac
(c) Rs. 132 lac (d) None of these
4. If 50% of contingencies funds are used towards health and accidents, what will be the expenditure in rupees under this head, keeping the total budget unchanged?
- (a) Rs. 39 lac (b) Rs. 150 lac
(c) Rs. 174 lac (d) Rs. 51 lac
5. From the total budget, if the canteen and social security heads are reduced by 25 % and 10 % respectively, what saving could be achieved?
- (a) Rs. 170 lac (b) Rs. 157.71 lac
(c) Rs. 37.55 lac (d) nil
6. How much amount is saved if contingency fund is not utilized and 11.25 % of recreation budget is over-spent?
- (a) Rs. 25 lac (b) Rs. 84 lac
(c) Rs. 18 lac (d) nil
7. If insurance premiums during the year amount to 6.8 % of the social security and insurance budget, how much amount is left for spending on social security?
- (a) Rs. 54 lac (b) Rs. 55 lac
(c) Rs. 75 lac (d) 20 lac
8. By increasing the total budget 3 times, how much amount will be increased on canteen expenses?
- (a) Rs. 360 lac (b) Rs. 361 lac
(c) Rs. 240 lac (d) none of these

PRACTICE TESTS

Quantitative Aptitude And Data Interpretation

Graph showing monthly expenditure of a firm from January to August during the years 1983, 1984 and 1985.



Study the data presented in the above graph and answer the following questions:

- What is the total expenditure during the period under review (7 months) in 1983?
 - Rs. 21,07,000
 - Rs. 21,96,000
 - Rs. 21,54,000
 - Rs. 21,24,000
- What total expenditure has been made during the years 1983 and 1984 in the period covered in the graph?
 - Rs. 42,87,000
 - Rs. 2,70,000
 - Rs. 4,827,000
 - Rs. 4,278,000
- What is average monthly expenditure during the year 1985 covering the period shown in the graph?
 - Rs. 2,75,000
 - Rs. 2,70,000
 - Rs. 3,14,000
 - Rs. 2,47,000
- Which month has been least expensive during 1985?
 - June
 - April
 - May
 - July
- The expenditure in April 1985 was _____ % higher than that of corresponding period in 1984.
 - 1.5 %
 - 2 %
 - 2.5 %
 - 0.94 %
- The expenditure in May 1983 was _____ % less than that of the corresponding period in 1985.
 - 3 %
 - 2.5 %
 - 1.5 %
 - 2 %
- The expenditure of May/June 1984 was _____ % higher than that of the corresponding period during 1985.
 - 3 %
 - 3.5 %

(c) 2 %

(d) zero

8. Tick the correct statement:

(a) In 1983 the expenditure was more in March than in January.

(b) The expenditure in January 1985 was equivalent to the expenditure in July 1984.

(c) In 1985 the expenditure was less than that of 1984.

(d) The total expenditure in January 1983 and 1985 was more than that of April 1983 and 1985.

9. Which of the following statements is incorrect?

(a) Expenses in January 1985 were the same as in April 1984.

(b) In all the 3 years together, maximum expenditure were incurred in April and July.

(c) Expenses incurred in March 1983 were less than that of corresponding period in 1984 and 1985.

(d) Expenses incurred in January, February and March 1983 were more than that of the corresponding period in 1984.

10. Tick the wrong statement.

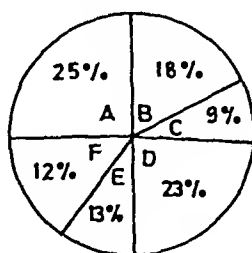
(a) Every year June was worst in expenditure.

(b) May 1984 was the worst month from expenditure point of view as compared to other months of the year.

(c) Expenses in February, March and May were equal in the year 1983.

(d) Expenses in January 1983, March 1984 and May 1985 were equal.

The following diagram represents domestic budget of a family. Study the various expenditures involved and answer the questions that follow:



DOMESTIC BUDGET OF FAMILY X

A = Expenditure on Food

B = House Rent

C = Entertainment

D = Education and maintenance of children

E = Medical and Miscellaneous

F = Statutory Deductions towards Provident Fund

11. Family X earns Rs. 3365 per month as salary plus 10 % as house rent subsidy on the monthly salary. If he pays 18 % of his total emoluments as house rent, calculate the amount of house rent per month he is paying.

(a) Rs. 618

(b) Rs. 600

(c) Rs. 666

(d) Rs. 675

12. The statutory deductions towards provident fund @ 12 % per month of the basic salary works out to be Rs. _____ per annum.

(a) Rs. 4854

(b) Rs. 4845.6

(c) Rs. 44.85

(d) Rs. 4485.6

13. After provident fund deduction and payment of house rent, what is the net pay packet of the family X based on the above data?

(a) Rs. 2631 p.m.

(b) Rs. 2600 p.m.

(c) Rs. 2355 p.m.

(d) Rs. 2350 p.m.

14. What is total amount per month the family spends on food and entertainment expenses?

- (a) Rs. 1100 (b) Rs. 1259
(c) Rs. 1104 (d) Rs. 1140

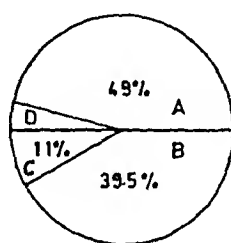
15. If the couple would have been newly married (without children), what maximum they could have saved including the provident fund savings?

- (a) Rs. 1180 (b) Rs. 1181
(c) Rs. 1187 (d) Rs. 1255

16. If a 12.5 % inflationary increase in the salary is given, what will be the gross emoluments per month?

- (a) Rs. 4164 (b) Rs. 4240.31
(c) Rs. 4206.20 (d) Rs. 4206.25

Data Interpretation And Quantitative Aptitude



A = Raw material Cost

B = Packing material Cost

C = Fixed Manufacturing Expenses

D = Labour Cost

Graph showing cost of production of a firm

Study the above graph and answer the questions that follow:

17. Find the value of D?

- (a) 1.5 % (b) 0.05 %
(c) 0.5 % (d) 5.0 %

18. If the total values in rupees of all sectors is Rs. 128.3 lac, calculate the value of D in Rupees?

- (a) Rs. 0.06 lac (b) Rs. 0.6 lac
(c) Rs. 0.006 lac (d) Rs. 6.0 lac

19. Packing and raw material costs together represents Rs. _____ of the total cost of production.

- (a) Rs. 88 lac (b) Rs. 111 lac
(c) Rs. 113 lac (d) none of these

20. If the total cost of production is Rs. 128.3 lac, what is the share of packing material cost alone?

- (a) Rs. 58 lac (b) Rs. 39.5 lac
(c) Rs. 57.0 lac (d) Rs. 50.7 lac

21. If the total cost of production doubles in a period of one year, what will be the value of D?

- (a) Rs. 10.3 lac (b) Rs. 1.3 lac
(c) Rs. 0.13 lac (d) Rs. 13 lac

22. If there is an increase of four times in the cost of packing material, what will be the total cost of packing material used?

- (a) Rs. 200.8 lac (b) Rs. 220.8 lac
(c) Rs. 228 lac (d) Rs. 202.8 lac

23. Total cost of production increases to five times of the present Rs. 128.3 lac, what will be the increase in percentage?

- (a) 57.6 % (b) 400 %
(c) 513.2 % (d) 56.45 %

24. If the total cost of labour increases from Rs. 0.6 lac to Rs. 2.4 lac, what percentage increase does it represent?

- (a) 25 % (b) 300 %
(c) 400 % (d) 75 %

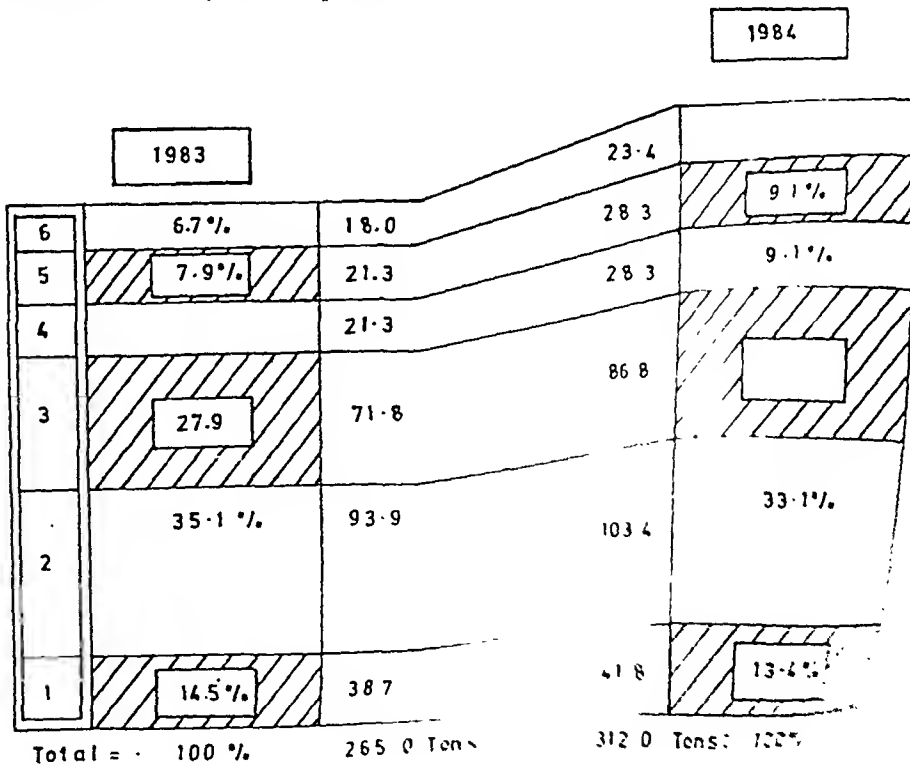
25. If the total cost of raw material becomes four times of Rs. 62.6 lac, calculate percentage increase?

- (a) 400 % (b) 25 %
(c) 300 % (d) 250.4 %

26. If packing cost increases by 2%, how much amount will be involved in packing cost?

- (a) 25.6 lac (b) 52 lac
(c) 52.24 lac (d) none of these

Study the following graphical diagram depicting agricultural production for 1983 and 1984 for various crops. Table below contains the index related to the details of various crops shown in the graph. With the help of the graphical representation and the table below, answer questions 27 - 31.



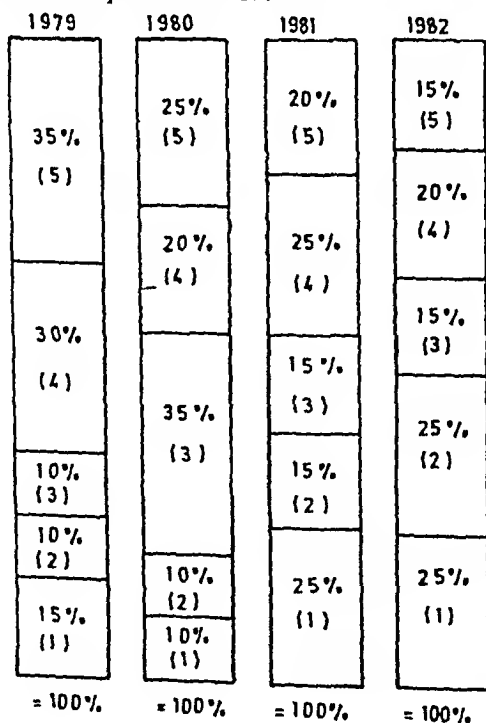
TABLE

- 1 = Cereals (Wheat + Rice)
2 = Cash crops (Sugarcane)

- 3 = Oilseeds
 4 = Plantation crops
 5 = Fibres (cotton)
 6 = Spices/dry fruits

27. What are the missing figures in row 4 for 1983 and in rows 6 and 3 for 1984?
 (a) 7.9 %, 7.5 % & 27.8 % (b) 7.9 %, 7.4 % and 27.4 %
 (c) 7.9 %, 7.3 % & 23.1 % (d) 6.9 %, 7.5 % and 27.1 %
28. What was the tonnage of Cash Crops production in the years 1983 and 1984?
 (a) 93.9 t/103.4 t (b) 71.8 t/86.8 t
 (c) 21.3 t/28.3 t (d) none of these
29. What was the percentage increase of fibre crops production in 1984 over 1983?
 (a) + 1.2 % (b) 31 %
 (c) 33 % (d) 33 %
30. What is the tonnage of cereal crops production in 1984?
 (a) 41.8 tonnes (b) 103.4 tonnes
 (c) 144.2 tonnes (d) 86.8 tonnes
31. What is the difference in tonnage of oil seeds production between 1983 and 1984?
 (a) 15.0 tonnes (b) 7.0 tonnes
 (c) 16.0 tonnes (d) 5.4 tonnes

Study the following comparative graphs for the years 1979 to 1982 depicting agricultural production along with the Table below mentioning various crops shown in the graph and answer the question 32–39.

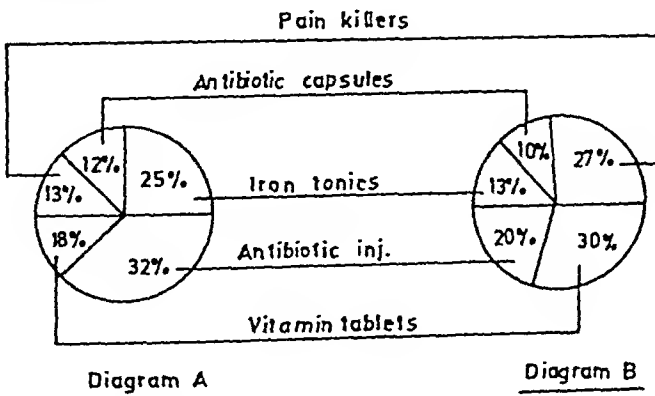


TABLE

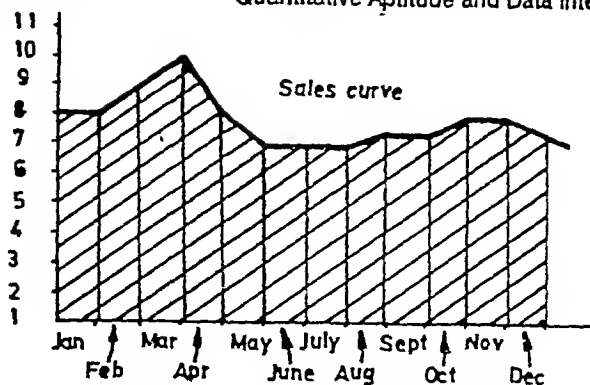
(1)	(2)	(3)	(4)	(5)
Rice	Wheat	Cotton	Bajra	Gram
Jowar	Barley	Sesamum	Sugarcane	Mustard

32. In which years RABI crop was the highest?
 (a) 1979 (b) 1980
 (c) 1982 (d) 1979-1980
33. In which years KHARIF crop was the highest?
 (a) 1980 (b) 1981
 (c) 1982 (d) 1979
34. Which crop shows a higher production in 1980?
 (a) Rabi (b) Kharif
 (c) Cotton/Sesamum (d) Gram/Mustard
35. In which year KHARIF crop was at the minimum?
 (a) 1980 (b) 1981
 (c) 1982 (d) 1979
36. Which year was worse in RICE and JOWAR (Cereals) production?
 (a) 1979 (b) 1980
 (c) 1981 (d) 1982
37. Which year was best in GRAMS and MUSTARD?
 (a) 1979 (b) 1980
 (c) 1981 (d) in no year
38. Which year was best in Cotton crop?
 (a) 1980 (b) 1981
 (c) 1982 (d) equal in all years
39. In which year RABI crop was at the lowest?
 (a) 1979 (b) 1982
 (c) 1981 (d) it was always good

Study the following diagrams and answer questions 40-46. Diagram 'A' represents a Bombay based pharmaceutical factory of a large Company. diagram 'B' represents a Punjab based factory of the same Company. Both the units are manufacturing certain types of drugs.



40. Which type of medicines show a higher percentage of production in the Bombay factory compared to the Punjab factory?
- Antibiotic capsules
 - Vitamins and Iron tablets
 - Antibiotic capsules and antibiotic injections
 - Pain killers
41. Which type of medicines show the same percentage of production in both the Bombay and Punjab units of the Company?
- Antibiotic Injections
 - Vitamins tablets
 - Vitamins and Iron tablets
 - Pain killers
42. Which of the following statements is correct?
- Bombay factory produces more pain killers than Punjab factory.
 - Punjab factory produces more Iron tablets than Bombay factory.
 - Total of Vitamins and Iron tablets production is same in both units.
 - Bombay factory produces less Antibiotic injections than Punjab factory.
43. Work out tonnage of Vitamins tablets produced both in Bombay and Punjab factories of the Company if 2% of total production amounts to 2.7 tonnes in each factory?
- 66.4 tonnes
 - 64.8 tonnes
 - 64.4 tonnes
 - 64.6 tonnes
44. If 100 % amounts to 135 tonnes of production in each unit, what is the tonnage of Vitamins tablets and Antibiotic injections together produced in Punjab unit of the Company?
- 68.9 tonnes
 - 67.50 tonnes
 - 67.0 tonnes
 - 67.48 tonnes
45. If 25% production at each factory amounts to 2000 cases, how many cases of Pain killers are produced in both units of the Company?
- 3250 cases
 - 3200 cases
 - 2160 cases
 - 1040 cases
46. If profit contribution is maximum from the sales of Iron and Vitamin tablets, which of the following answer choice is correct
- Bombay based factory is making maximum profit from sale of these medicines.
 - Punjab based factory is making maximum profit from sale of these medicines.
 - Both units of the Company are making equal profit from these medicines.
 - Punjab factory is making loss as compared to Bombay factory from sale of these medicines.



The above graph depicts sales story of a new product launched by a consumer goods marketing company. The sales are represented in 1000 cases and monthly sales achieved are plotted on the graph. Observe the sales curve carefully and answer the following questions:

47. Which two quarters of the year have same sales?
 (a) First and Second (b) Second and Third
 (c) Third and Fourth (d) First and Third
48. Which quarter registered highest sales?
 (a) January/March (b) April/June
 (c) July/Sept. (d) October/December
49. The total sales for the whole year is _____ cases.
 (a) 84,000 cases (b) 84,500 cases
 (c) 94,000 cases (d) 94,500 cases
50. Maximum sales growth was achieved in the month of _____.
 (a) February (b) March
 (c) April (d) May
51. Maximum sales was registered in the month of _____.
 (a) February (b) March
 (c) April (d) May
52. Maximum drop in sales was registered in the month of _____.
 (a) May (b) December
 (c) April (d) July
53. The average monthly sales comes to approximately _____ cases
 (a) 7,500 cases (b) 7,800 cases
 (c) 8,000 cases (d) 7,000 cases

TABULAR STATEMENT

GROSS RECEIPTS			GROSS EXPENSES		
Item	Rs	%	Item	Rs	%
Sales proceeds			Direct manufacturing expenses		
- Washing soap	112,390	40	Raw materials	121,662	43.3
- Toilet soap	55,352	19.7	Packing materials	73,054	26.0
- Detergents	62,095	22.1	Labour costs	23,321	8.3
- Scrap/unusable items	24,164	8.6	Indirect manufacturing costs		
Refunds:			Staff welfare	4,777	1.7
- Excise duty	13,206	4.7	Pension fund	6,743	2.4
- Loans	13,768	4.9	Social amenities Misc	7,024	2.5

			Sales Tax	8,991	3.2
			Excise duty	12,925	4.6
			Marketing Exp.	11,801	4.2
			General Overheads	10,677	3.8
TOTAL RECEIPTS	280,975	100	TOTAL EXPENSES	280,975	100

The above is the statement of receipts and expenditure of a firm manufacturing soaps and detergents. Study the data given in the statement and answer the following questions:

54. The average yearly combined expenditure on packing materials, marketing expenditure and general over-heads was approximately what fraction of the total annual expenditure of the firm?

- (a) $\frac{2}{3}$ (b) $\frac{1}{3}$
(c) $\frac{1}{2}$ (d) $\frac{2}{4}$

55. If the income from the sale of toilet soap during the given year is x , then the total income during the said period is about?

- (a) x^5 (b) $5x$
(c) $\frac{1}{2}x$ (d) x^2

56. What is co-relation between returns of loans and the indirect manufacturing costs Pension Funds and Social amenities?

- (a) there is no co-relation
(b) both are equal
(c) both are related to employees benefit
(d) both represent expenditure

57. What is the difference between excise duty refund and the excise duty paid in terms of money?

- (a) 0.1 % (b) Rs. 281/-
(c) Rs. 200/- (d) both are equal

58. What is relation between receipts of loans and the expenditure on pension fund and social amenities?

- (a) refunds and indirect manufacturing costs are directly related.
(b) both are equal in terms of percentage and total sum.
(c) difference of 0.001.
(d) there is no relation at all.

Answers And Explanations

1. (d) Total of all months, i.e.

$$306 + 300 + 300 + 306 + 300 + 306 + 306 = 2124$$

2. (d) Total of 1983 and 1984, i.e.

$$306 + 300 + 300 + 306 + 300 + 306 + 306 = 2124 \text{ (1983)}$$

$$300 + 306 + 306 + 312 + 318 + 300 + 312 = 2154 \text{ (1984)}$$

$$2124 + 2154 = 4278$$

3. (c) Total of all months of 1985 divided by 7 = 314,000

4. (c) Curve of 1985 going downward depicts this.

5. (b) $318 - 312$

$$\frac{318 - 312}{312} \times 100 = 1.92 \text{ or say } 2\%$$

6. (d) $306 - 300$

$$\frac{306 - 300}{300} \times 100 = 2\%$$

$$7. (d) 1984 = 318 + 300 = 618$$

$$1985 = 306 + 312 = 618$$

Hence there is no change.

$$8. (b) 312 \text{ in both cases}$$

$$9. (d) 1983 = 306 + 300 + 300 = 906 \text{ and}$$

$$1984 = 300 + 306 + 306 = 912$$

10. (a) May was the worst month only in 1984 as the curve is steeply going up.

$$11. (c) \text{ Basic salary} = \text{Rs. } 3365$$

$$10 \% \text{ House rent} = \text{Rs. } 336.50$$

$$\text{Total emoluments} = \text{Rs. } 3365 + 336.50 = 3701.50$$

$$18 \% \text{ of total emoluments} = \text{Rs. } 666.27 \text{ or say Rs. } 666.$$

$$12. (b) 3365 \times 12$$

$$\frac{\text{-----}}{100} \times 403.8 \times 12 = 4845.6$$

$$100$$

$$13. (a) \text{ Total emoluments} = \text{Rs. } 3365 + 336.50 = 3701.50$$

$$3701.50 - 1070.07^* = 2631.44$$

* House rent Rs. 666.27 + Provident Fund Rs. 403.8 = 1070.07 are to be reduced from the total emoluments to get take-home pay packet.

$$14. (b) \text{ Total emoluments} = 3365 + 337 \text{ (House Rent)} = 3702$$

$$\text{Food } 25 \% + \text{entertainment } 9 \% = 34 \% \text{ of } 3702 = 1259$$

$$15. (d) \text{ Saving is } D = 23 \% \text{ of } 3702 = \text{Rs. } 851 \text{ plus}$$

$$\text{Provident Fund } 12 \% \text{ of } 3702 = \text{Rs. } 404$$

$$\text{Total saving} = 851 + 404 = 1255$$

$$16. (a) \text{ Raise} = 12.5 \% \text{ of } 3365 = 421$$

$$\text{Therefore new basic salary} = 3365 + 421 = \text{Rs. } 3786$$

$$\text{Plus House rent, } 10 \% \text{ of } 3786 = \text{Rs. } 379$$

$$\text{Total new emoluments} = \text{Rs. } 4164$$

The budget would mean how the *total* income would be spent. Total income would *include* the House Rent allowance.

17. (c) There must be a total of 100 % in a circle graph. The sum of other sectors is $49 \% + 39.5 \% + 11 \% = 99.5 \%$

$$\text{Therefore } D = 100 \% - 99.5 \% = 0.5 \%$$

$$18. (b) 0.5 \% \text{ of Rs. } 128.3 \text{ lac} = \text{Rs. } 0.6 \text{ lac}$$

$$19. (c) \text{ Packing material} = 39.5 \% \text{ of Rs. } 128.3 \times 39.5$$

$$\frac{\text{-----}}{100} = 50.7$$

$$\text{Raw material} = 49 \% \text{ of Rs. } 128.3 \times 49$$

$$\frac{\text{-----}}{100} = 62.6$$

$$50.7 \text{ lac} + 62.6 \text{ lac} = 113$$

20. (d) Packing material represents 39.5 % of the total cost of production. For 39.5 % of Rs. 128.3 = 50.7

21. (d) Doubling a sum implies $\times 2$. D represents 0.5 % of the total production. Hence 0.5 % of Rs. 256.6 = $\frac{256.6 \times 0.5}{100}$

$$100$$

$$22. (d) \text{ Four times increase} = \times 4. \text{ Hence Rs. } 50.7 \times 4 = \text{Rs. } 202.8$$

23. (b) Five times increase = 400 % increase (100 is already included in it which has not to be added).

$$24. (b) \text{ Percentage increase} = \frac{2.4 - 0.6}{0.6} \times 100 = 300 \%$$

25. (c) Four times increase implies 300 %

26. (b) 2 % increase on packing material cost = 2 % of Rs. 50.7 = approx. Rs. 52 lacs.

27. (a)

28. (a)

29. (d)

30. (a)

31. (a)

32. (b) Rabi crop consists of :

Rice/Jowar/Cotton/Sesamum/Gram/Mustard

33. (c) Kharif crops consists of:

Wheat / Barley / Bajra / Sugarcane

34. (a)

35. (a)

36. (b)

37. (a)

38. (a)

39. (b)

40. (c) In Bombay 12 % of antibiotic capsules and 32 % of antibiotic injections are produced = 44 %, whereas in Punjab the corresponding figures are 10 % and 20 % only = 30 %.

41. (c)

42. (c) Total production of Vitamin and Iron tablets in both the units is:

Bombay unit : 25 % + 18 % = 43 %

Punjab unit : 13 % + 30 % = 43 %

43. (b) Bombay unit : 18×2.7

$$\frac{\quad}{2} = 24.3$$

Punjab unit : 30×2.7

$$\frac{\quad}{2} = 40.5$$

$24.3 + 40.5 = 64.8$ tonnes

44. (b) Punjab unit produces :

18 % Vitamin tablets + 32 % of Antibiotic injections = 50 % of total medicines produced.

Hence 50 % of 135 tonnes = 67.50 tonnes

45. (b) If 25 % production = 2000, then 100 % production = 8000 cases

Punjab unit produces 13 % pain killers and

Bombay unit produces 27 % pain killers, i.e.

40 % of the total production.

40 % of 8000 cases = 3200 cases

46. (c) Both factories produce 43 % of Tonics.

(Tonic medicines include Vitamins and Iron tablets)

Sales Curve

47. (b) If you total up quarterly sales achieved, you will find : 1st quarter (Jan March) = 27,000 cases, 2nd quarter = 22,000 cases, 3rd quarter = 22,000 cases and the last quarter = 23,500 cases ($27,000 + 22,000 + 22,000 + 23,500 = 94,500$ cases)

48. (a) First quarter = 27,000 cases

49. (d) The total sales for 12 months = 94,500 cases

50. (a) Growth is compared to the initial figure. Maximum growth took place in February because in January it was 8000 cases and from 8000 cases the growth to 9000 cases is more than from 9000 cases to 10,000 cases. Therefore the maximum growth registered is in February.

51. (b) In March there was highest sales = 10,000 cases

52. (c) April. From 10,000 cases to 8,000 cases drop is maximum. Here the drop has to be compared from the maximum figure to the next lower and not the lowest in the graph.

53. (b) Total sales divided by 12.

54. (b) The total expenses on three items viz:

Packing materials = 26 %

Marketing expenses = 4.2 %

General overheads = 3.8 %

Total = 34 %

34 % of the total expenditure represents $\frac{1}{3}$ of the total expenditure.

55. (b) The sales receipt from sale of toilet soap represents 19.7 % or roughly 20 % of the total receipts. 20 % represents $\frac{1}{5}$, the receipts from the sale of toilet soap were about 5 times the total receipts.

56. (b) Both are 4.9 % of receipts and expenditure respectively.

57. (b) Excise duty refunded - Excise duty paid (13,206 - 12,925)

58. (b) Both are equal in terms of money and percentages.

Section Eight

TEST PAPERS

You have become familiar with the type of questions that can be found in the mental ability paper of your examination. You can now work through the test papers given in this section. In preparing these tests, we have tried to visualise the questions you are likely to face in your examination. In each Test Paper, 90 questions have been included. These are of various types.

Each test paper has to be tackled in exactly 90 minutes (one and a half hour). In order to get the maximum benefit from these tests, take them under actual examination conditions. Remember the following points:

1. Read carefully the directions given in each question, before beginning to answer the question. This is very important because you have to know exactly what is asked in the question. Sometimes the question could seem familiar in structure, but in the direction something else may be asked, and this will make your answer absolutely incorrect.
2. *Don't linger* too long over any particular question (You may be on the wrong track altogether, and might do better with the next one). But don't give up too easily, most of the questions can be answered with a bit of patience and cool headedness.
3. As all questions carry equal marks, do not waste too much time on any particular question. *Budget your time equally* for all questions. By spending more time on one question, you may be forced to leave the questions where you are sure to score.
4. *Time yourself properly.* Keep a reliable watch beside you. Give yourself exactly 90 minutes, i.e., one minute per question. In these 90 minutes do not allow anybody to disturb you.
5. Your answer in each case will be a single number, letter or word. Each question is provided with five answer choices marked (a) (e). You will have to choose one correct answer from the answer choices given under each question. Even if you have some other correct answer which is not given as any of the answer choices, you have to *select the most correct answer* from the given answer choices only. In other words you cannot go out of the answer choices to answer any question.

HOW THE ANSWERS ARE TO BE INDICATED

Take a ruled sheet of paper. Divide it in three columns and mark 1 to 30, 31 to 60 and 61 to 90 numbers as shown below. Get this answer sheet ready before starting to answer the paper. Your sheet will look like the specimen given here.

1	31	61
2	32	62
3	33	63

27	57	87
28	58	88
29	59	90

This is your answer sheet in which you have to simply write the answer choice, i.e., (a) or (b) or (c), etc., as the case may be.

SCORES

Give yourself one mark for each correct answer and deduct one mark for each wrong answer. Then rate yourself against the following scale:

85-90 questions correct	Excellent
78-84 questions correct	Very Good
66-76 questions correct	Good
54-64 questions correct	Fair
Less than 54 questions correct	Poor

As regards timing, your performance is to be rated as follows:

90 questions in 90 minutes	Excellent
85 questions in 90 minutes	Good
80 questions in 90 minutes	Fair
60 or less questions in 90 minutes	Poor

It is very important here, that you be honest with yourself. Once you have worked through all the tests and rated your score and performance, allow a gap of one week and then repeat the test. Try to improve your score in each (second and third) attempt. This will give you sufficient practice and drilling to face the examination most successfully and with full confidence.

TEST PAPER ONE

DIRECTIONS: If the order of the English Alphabet is reversed and each letter represents the letter of whose position it occupies, then:

1. Which letter will be exactly in the middle?

- | | |
|----------|-------|
| (a) L | (b) O |
| (c) P | (d) N |
| (e) None | |

2. Which will be the fourth letter towards left, after the letter which occupies the central position?

- | | |
|-------|----------|
| (a) N | (b) O |
| (c) L | (d) None |
| (e) P | |

3. Which letter will be the fifth letter towards left from the last letter?

- | | |
|-------|-------|
| (a) I | (b) F |
| (c) E | (d) G |
| (e) H | |

4. How will the word 'FORTHAN' appear?

- | | |
|-------------------|-------------------|
| (a) U L J G Z N D | (b) U M I G Z N M |
| (c) U L I G S Z M | (d) N A H T R O F |
| (e) F O R T H A N | |

5. Which of the following letters represent 'MONDAY'?

- | | |
|-----------------|-----------------|
| (a) N O W Z A Y | (b) N O M W Z B |
| (c) Y A D N O M | (d) N L M V Z B |
| (e) N L M W Z B | |

DIRECTIONS: In Questions 6-10, there are five groups of letters marked (a-e). Four of these groups are alike in one way or the other and one is different. Find the one which is different:

- | | |
|--------------|-----------|
| 6. (a) A E I | (b) E I M |
| (c) I M Q | (d) Q U Y |
| (e) B D G | |

- | | |
|--------------|-----------|
| 7. (a) A C E | (b) C F G |
| (c) B D F | (d) H I K |
| (e) M O Q | |

- | | |
|--------------|-----------|
| 8. (a) A B D | (b) I K L |
| (c) I M P | (d) P Q R |
| (e) U Z Y | |

- | | |
|--------------|-----------|
| 9. (a) A B E | (b) I K L |
| (c) E K I | (d) P Q R |
| (e) T U O | |

- | | |
|-----------------|-------------|
| 10. (a) A P I T | (b) I K L P |
| (c) T O I U | (d) P Q R T |
| (e) I G U Q | |

DIRECTIONS: In Questions 11-15, each question contains five groups of letters. One of these groups is different from the other four. It contains the answer choices. You have to find out which letter/replace the question mark.

Column I

Column II

	(1)	(2)	(3)	(4)	(5)
11.	Z	X	V	?	R
12.	F	I	L	O	?
13.	E	H	L	Q	?
14.	G	J	M	P	?
15.	Z	W	T	Q	?

(a)	(b)	(c)	(d)	(e)
R	Y	S	V	T
R	M	N	P	Q
R	W	S	O	M
T	R	Q	S	U
M	O	L	J	N

DIRECTIONS: Questions 16 to 18 contain letter-number series. Find the odd letter-number combination:

16. (a) MNO = 14-13-12

(c) ABC = 26-25-24

(e) GHI = 20-19-16

17. (a) WXY = 4-3-2

(c) NOP = 13-12-11

(e) SQO = 8-10-12

18. (a) RST = 9-8-7

(c) JKL = 17-16-15

(e) PRS = 11-9-8

(b) CDE = 24-23-22

(d) JKL = 17-16-15

(b) LMP = 12-13-14

(d) BDG = 25-23-20

(b) XYZ = 3-2-1

(d) FGH = 12-13-15

DIRECTIONS: Questions 19-23 contain jumbled letters groups. You have to rearrange jumbled letters and mark the last letter of the word so obtained. Letter choices are marked (a)-(e):

(To help you to arrive at correct word easily, a hint in brackets is given in each question)

19. R H B M E C A

(a) B

(c) E

(e) R

(A Room)

(b) H

(d) C

20. L S R H A M A

(a) S

(c) H

(e) M

(A Rank in defence)

(b) R

(d) L

21. A A P S C L

(a) P

(c) L

(e) S

(To do with Computers)

(b) C

(d) A

22. C A E E D D

(a) A

(c) C

(e) E

(A Period of time)

(b) D

(d) S

23. A H Y R A T A B A

(a) Y

(c) R

(e) B

(A space venture)

(b) A

(d) H

DIRECTIONS: in Questions 24-28, there is a blank space in each question in which only one of the five alternatives (marked (a)-(e)) given under the question satisfies the same relationship as is found between the two terms on the other side of the sign (::). Find the correct alternative to refill in the blank space:-

24. MAROZIM : MIZORAM :: _____ : PASCAL

- (a) DDRSAM (b) LASCAP
 (c) PUANJB (d) LASCPA
 (e) LACSAP
25. FOCUS : GPDVT :: LOTUS : _____
 (a) MQUVT (b) MQRSV
 (c) MPUVT (d) SUTOL
 (e) MQRVT
26. DELHI : CDKGH :: PATIALA : _____
 (a) ALAITAP (b) QBUJBMB
 (c) QSIHZKZ (d) OZTHZKZ
 (e) OZSHZKZ
27. PHONE : RJQPG :: QUOTE : _____
 (a) ERPVP (b) RVQUG
 (c) RVPSF (d) SWQVG
 (e) TEOUQ
28. QJMPU : PILOT :: _____ : WOOLS
 (a) SLOOW (b) VNNR
 (c) XPPMT (d) XPFNR
 (e) YQONU

For Questions 29-32 :

QBZHXHQDUM

If the above letters are placed in the order opposite in English Alphabetic order, then:

29. Which would be the third letter?

- (a) D
 (c) Q
 (e) U

QBZHXHQDUM

30. Which would be the fifth letter from the right?

- (a) Z
 (c) B
 (e) U

QBZHXHQDUM

31. Which letter will be exactly in the middle?

- (a) Z
 (c) M
 (e) B

QBZHXHQDUM

32. Which two letters will be at the ends?

- (a) BD
 (c) HB
 (e) BB

QBZHXHQDUM

DIRECTIONS: The words marked a-e. In Questions 33-36, used for coding the words for the words in Questions 37-40.

QBZHXHQDUM

(e) HEIVF

Questions	Words	Codes
33.	REASON	RSWEIV
34.	PHONED	DENOHP
35.	TABLE	ELFAT
36.	FRIDAY	GSJEBZ
37.	SENSE	DRMDR
38.	COBAL	DPCBM

DIRECTIONS: In Questions 39-44 there are two columns marked I and II. Column I contains one set of letters. In Column II there are five sets of letters marked a-e. One of the sets in Column II has same characteristics as the letter set in Column I. Find appropriate letter set from column II having same characteristics as the letter set in Column I:

Column I

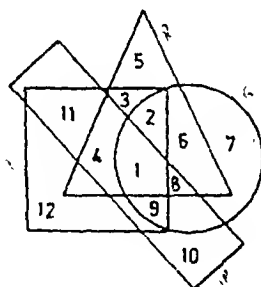
Column II

	(a)	(b)	(c)	(d)	(e)
39. ADBE	LMNP	DEGI	LPGQ	PSQT	PSWY
40. AEBF	BDCF	EGHJ	MLOR	STUW	GKHL
41. MOPR	DEGH	IJKM	BCDF	CEFH	RSTW
42. LMPO	RTVW	PRTU	RSTU	GIJK	RSVW
43. LIEP	QPSI	PNAT	RAOS	TUXW	ACDE
44. ALHE	ACDF	OEMN	PTUI	XWIS	IPNO

DIRECTIONS : In Fig. 1 below, various figures are interlocking each other, each representing a class of population as identified in the Index given on left hand side of Fig. 1. Study the diagram and answer the questions (45-55) that follow:

Index

- = Graduates
 △ = Rural Population
 □ = Hard-working people
 ▭ = Honest people



45. Graduate, hard-working and honest rural population is indicated by ____?
 (a) 3 (b) 2
 (c) 4 (d) 1
 (e) 8
46. Rural, graduate people who are neither honest nor hard-working are indicated by?
 (a) 4 (b) 2
 (c) 4 (d) 6
 (e) 9
47. Honest, Graduate and hard-working in urban population is indicated by ____?
 (a) 8 (b) 5

(c) 7

(e) 3

(d) 9

48. Which number indicates urban graduate people who are neither hard-working nor honest?

(a) 5

(c) 4

(e) 7

(b) 9

(d) 6

49. Hard-working people who are neither graduate nor honest are represented by _____?

(a) 11

(c) 4

(e) 5

(b) 7

(d) 12

50. People who are honest but are not hard-working and do not live in villages are indicated by _____?

(a) 10

(c) 7

(e) 8

(b) 9

(d) 11

51. Rural hard-working people who are neither graduate nor honest are indicated by _____?

(a) 3

(c) 4

(e) 9

(b) 2

(d) 1

52. Rural, hard-working, honest people who are not graduates are represented by _____?

(a) 3

(c) 6

(e) 11

(b) 2

(d) 4

53. Graduate, hard-working, rural people who are not honest are represented by _____?

(a) 4

(c) 2

(e) 7

(b) 3

(d) 5

54. Which number indicates people who live in villages and are not graduate, honest and hard-working?

(a) 7

(c) 11

(e) 8

(b) 6

(d) 5

55. People who are graduate, honest and live in villages but are not hard-working are represented by _____?

(a) 8

(c) 9

(e) 2

(b) 7

(d) 6

56. If SCOOTER = 14 and Motor-cycle = 20, then VESPA = ?

(a) 12

(c) 5

(e) 10

(b) 11

(d) 12

57. If HOUSE = 12345, TOUR = 6237 and BOAT = 8296, then THOSE = ?

(a) 61247

(b) 61245

(d) 61345

(c) 57462

(e) 62536

58. If $S = 19$, $O = 15$ and $U = 21$, then $P = ?$

(a) 6

(b) 15

(c) 13

(d) 16

(e) 13

59. If $A + B + C = 6$ and $Q - M = 4$, calculate value of $H \times D = ?$

(a) 30

(b) 18

(c) 25

(d) 32

(e) 48

60. If $OPQ = 96$, $RST = 114$, then $GHI = ?$

(a) 118

(b) 108

(c) 68

(d) 48

(e) 96

61. $CAR = 44$ and $BUS = 84$, then $TRUCK = ?$

(a) 130

(b) 98

(c) 146

(d) 148

(e) 112

62. In a certain code language 'FOREST' and 'HAT' are coded as 'Z P D M L T' and 'N K T' respectively. Based on this coding scheme, how will you code the word 'THERE'?

(a) T P M D M

(b) R P F S F

(c) T N M D M

(d) T N M Z M

(e) T M N D N

63. If 'THERE' is coded as 'V J X T X' and 'FORCE' is coded as 'H X T E X', how will you code 'PILOT'?

(a) Q J M P U

(b) R J K P V

(c) R X N X V

(d) R K N Q U

(e) R J K R V

DIRECTIONS: Ram walks 2 km towards North and turns to his right and walks 4 km more. He then turns to his right and walks 4 km and turns again to his right and walks another 4 km. Here he meets Radha coming from opposite direction. They both stop here.

64. After taking the first turn, in what direction Ram was going?

(a) South

(b) North

(c) West

(d) East

(e) South-east

65. If starting point is marked 'A' and finishing point is marked 'B', what will be the distance between these points?

(a) 10 km

(b) 8 km

(c) 6 km

(d) 2 km

(e) Cannot be ascertained

66. From which direction Radha was coming?

(a) South

(b) North

(c) South-east

(d) East

(e) West

67. After taking the second turn, in which direction Ram will be walking?

(a) West

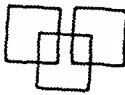
(b) North

(c) South-east

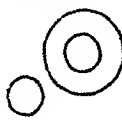
(e) East

(d) South

68. Which of the following diagrams best illustrates the class of : Alleged law-breakers, Law-breakers and prisoners?



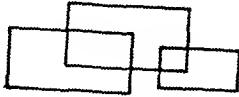
(a)



(b)



(c)



(d)



(e)

69. What is the number of triangles in Fig. 1?

(a) 46

(b) 56

(c) 22

(d) 48

(e) 38

70. How many squares are there in the given figure?

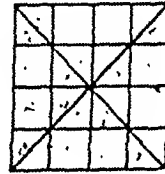
(a) 38

(b) 32

(c) 48

(d) 30

(e) 21

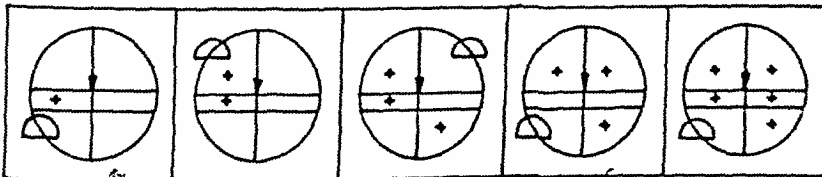


Handwritten notes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

NON-VERBAL TESTS

DIRECTIONS: Each question has five figures marked a-e. Four of these are alike in some way or the other and one is different or odd. You have to choose the odd one out

Q.1



(a)

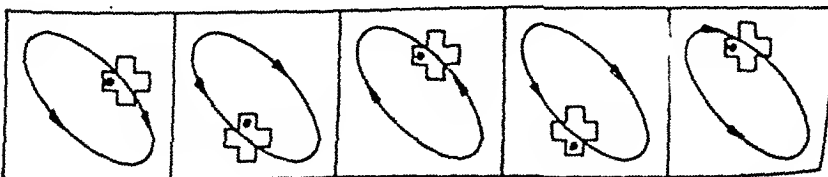
(b)

(c)

(d)

(e)

Q.2



(a)

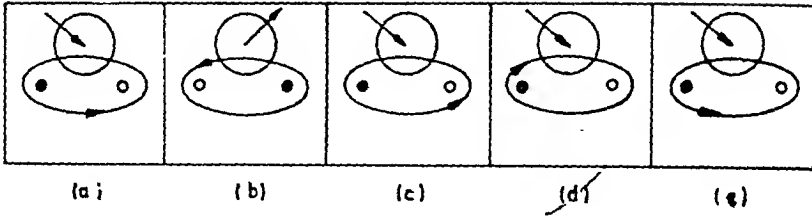
(b)

(c)

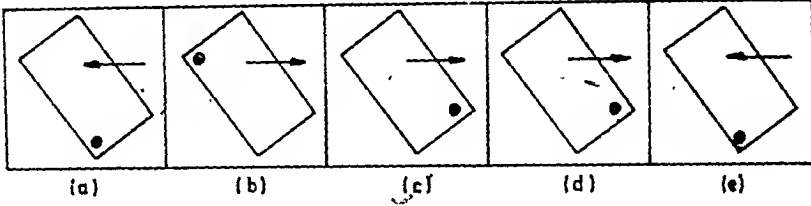
(d)

(e)

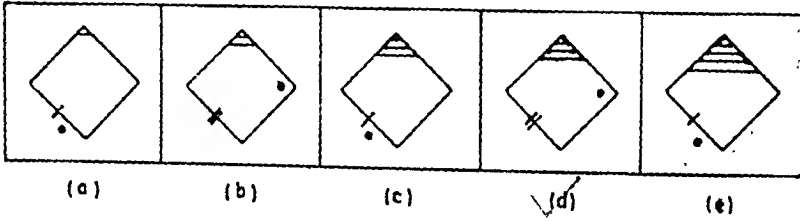
Q.3



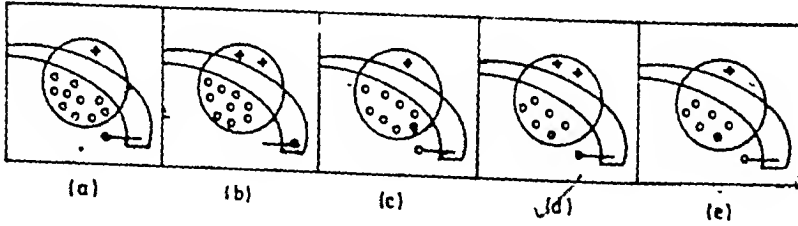
Q.4



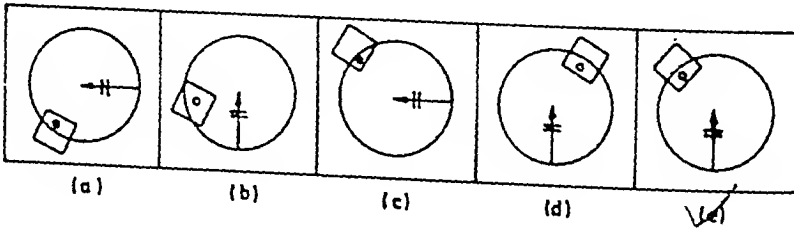
Q.5

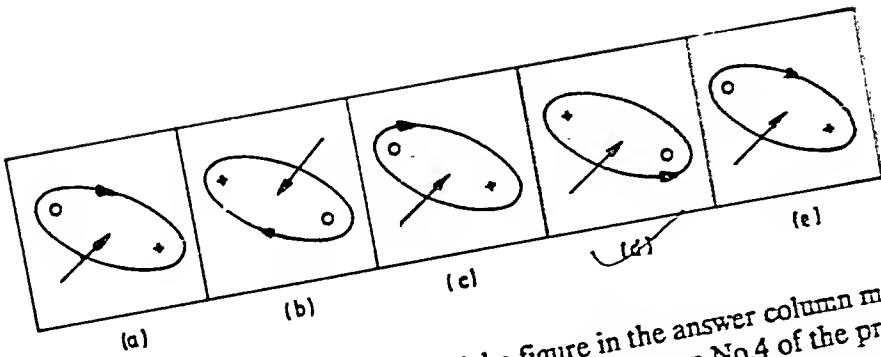


Q.6



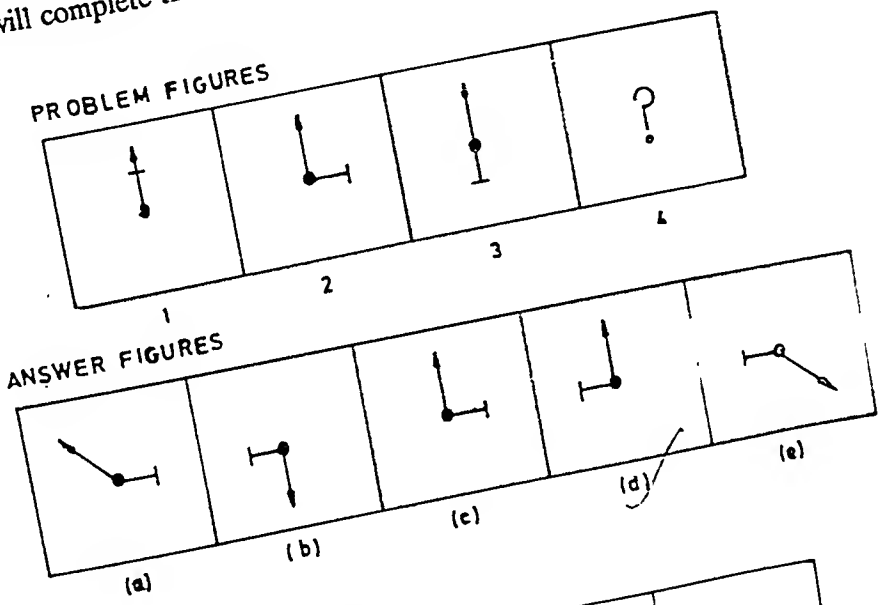
Q.7



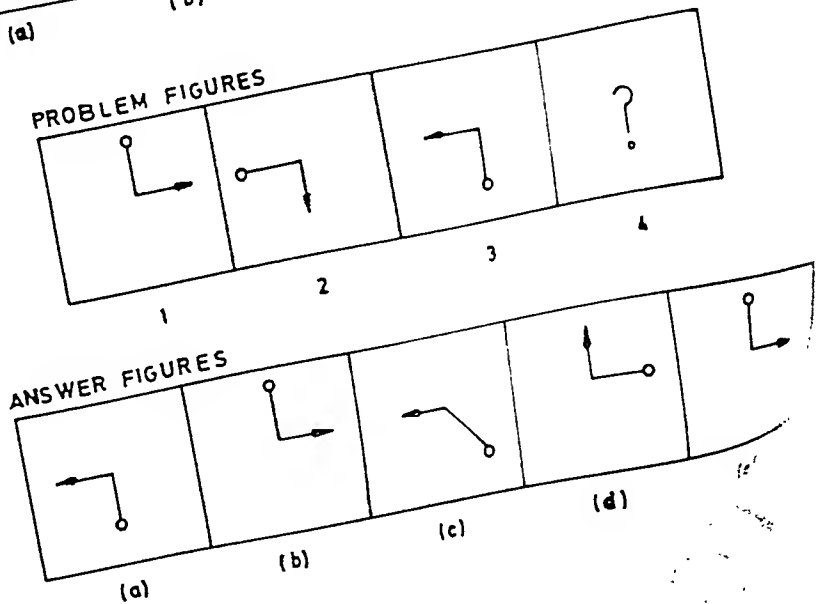


DIRECTIONS: Name the serial number of the figure in the answer column marked a-e which will complete the series, i.e. fit in the last column No.4 of the problem figure:-

9.

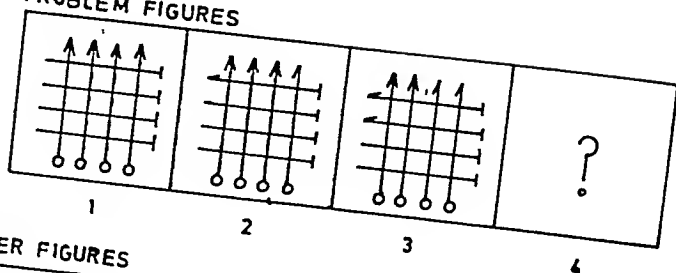


10.

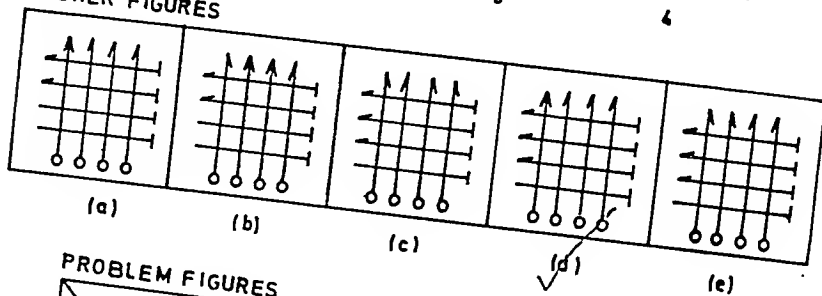


11.

PROBLEM FIGURES

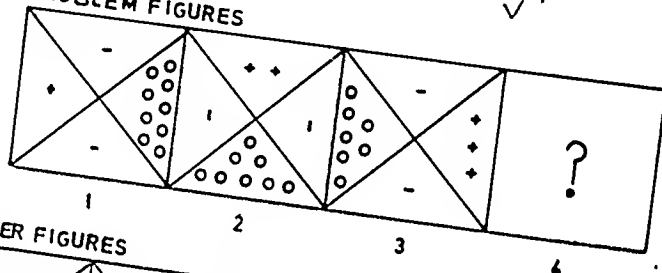


ANSWER FIGURES

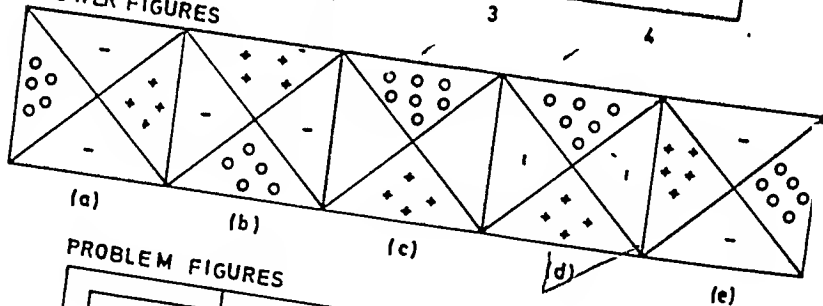


12.

PROBLEM FIGURES

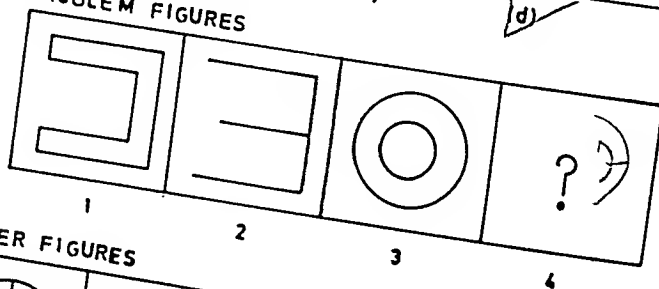


ANSWER FIGURES

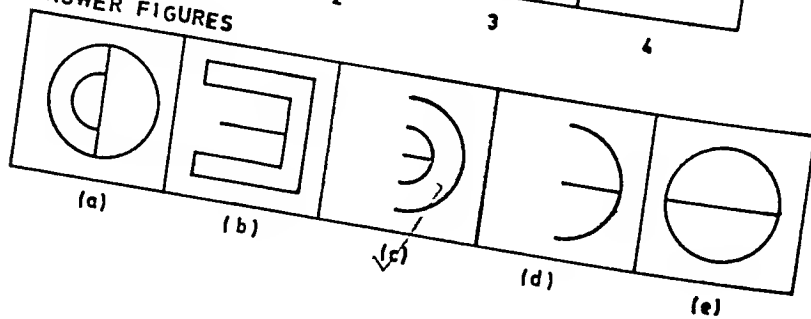


13.

PROBLEM FIGURES

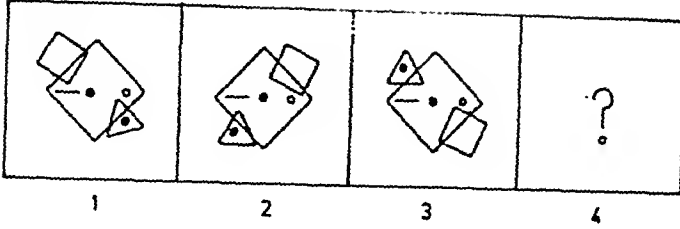


ANSWER FIGURES

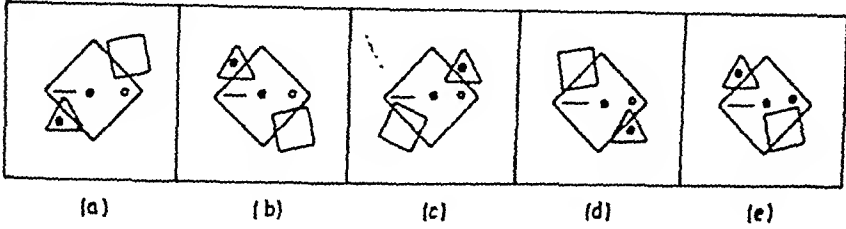


14.

PROBLEM FIGURES

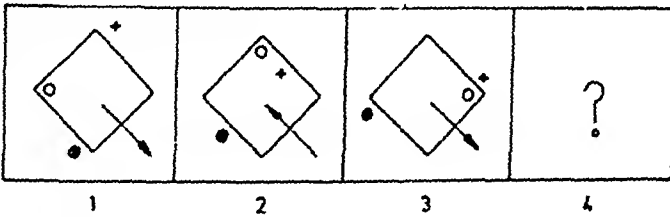


ANSWER FIGURES

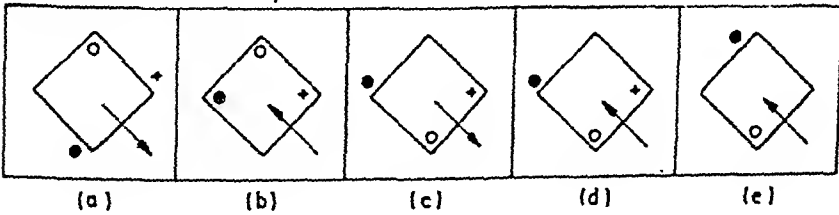


15.

PROBLEM FIGURES

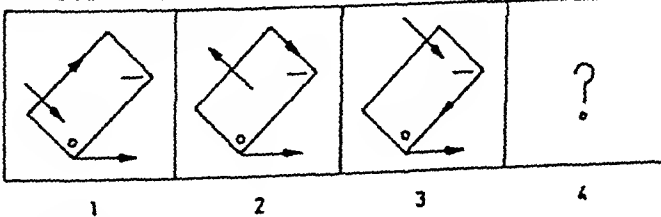


ANSWER FIGURES

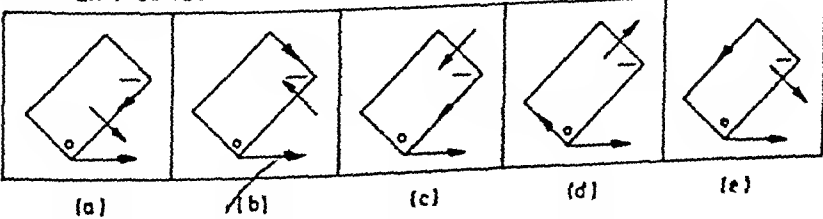


16.

PROBLEM FIGURES

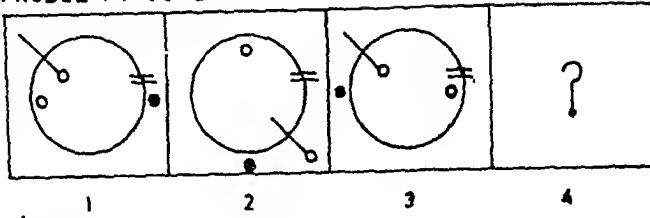


ANSWER FIGURES

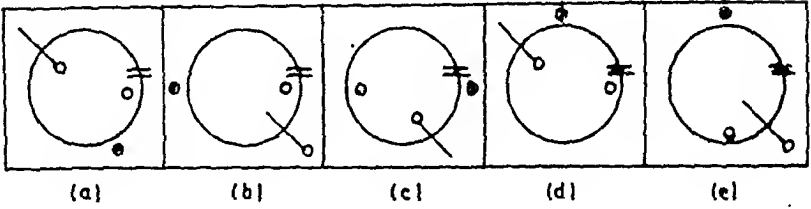


17.

PROBLEM FIGURES

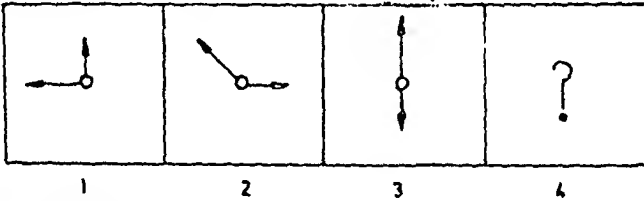


ANSWER FIGURES

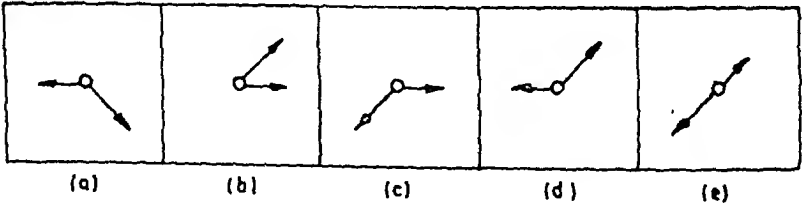


18.

PROBLEM FIGURES

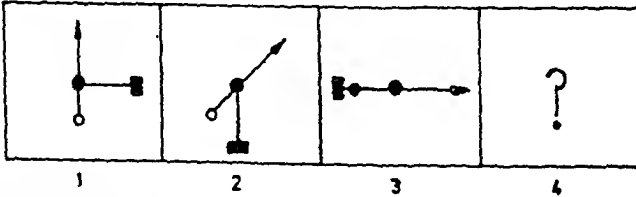


ANSWER FIGURES

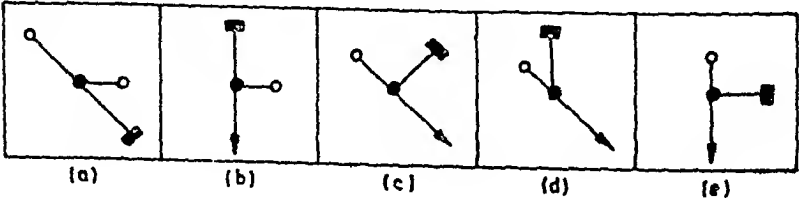


19.

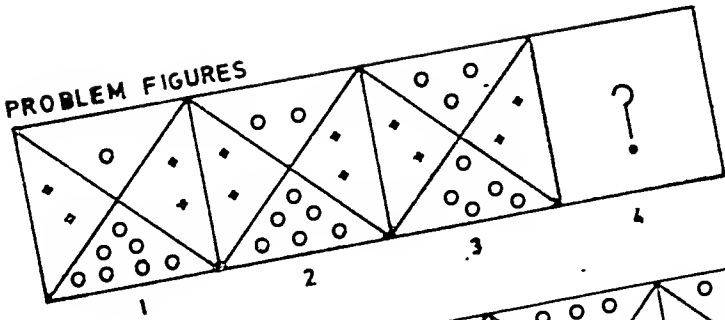
PROBLEM FIGURES



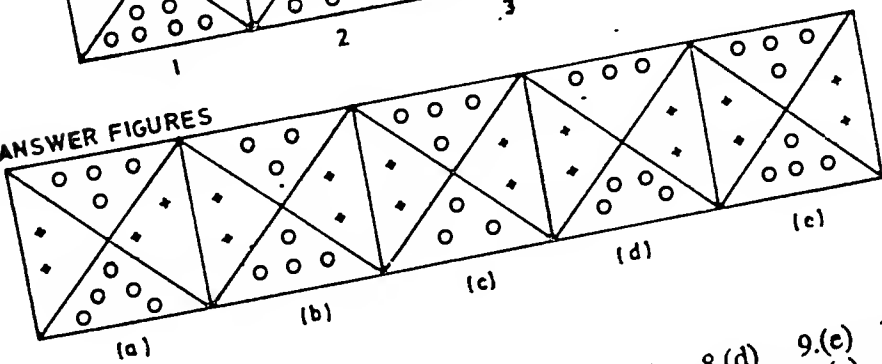
ANSWER FIGURES



PROBLEM FIGURES



ANSWER FIGURES



Answers and Explanations

- | | | | | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1.(e) | 2.(d) | 3.(c) | 4.(c) | 5.(e) | 6.(e) | 7.(d) | 8.(d) | 9.(e) | 10.(c) |
| 11.(e) | 12.(a) | 13.(b) | 14.(d) | 15.(e) | 16.(e) | 17.(b) | 18.(d) | 19.(e) | 20.(e) |
| 21.(c) | 22.(e) | 23.(b) | 24.(e) | 25.(c) | 26.(e) | 27.(d) | 28.(c) | 29.(e) | 30.(d) |
| 31.(c) | 32.(e) | 33.(e) | 34.(d) | 35.(a) | 36.(b) | 37.(c) | 38.(b) | 39.(d) | 40.(c) |
| 41.(d) | 42.(e) | 43.(c) | 44.(e) | 45.(d) | 46.(d) | 47.(d) | 48.(e) | 49.(d) | 50.(a) |
| 51.(a) | 52.(d) | 53.(c) | 54.(d) | 55.(a) | 56.(e) | 57.(b) | 58.(d) | 59.(d) | 60.(d) |
| 61.(c) | 62.(c) | 63.(c) | 64.(d) | 65.(d) | 66.(e) | 67.(d) | 68.(e) | 69.(d) | 70.(d) |

Explanation

For questions 1 5
 Alphabet when reversed will appear as follows:
 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
 Z Y X W V U T S R Q P O N M L K J I H G F E D C B A

6. In all terms three immediately intervening letters are skipped e.g. A (bcd) E (fgh) I = A E I. In (e) this pattern is not followed hence it is odd.

7. In all one intervening letter is skipped, except in (d) e.g. A (b) C (d) E = ACE

8. In all terms there is a vowel in the beginning. In (d) vowel is in the middle.

9. In all each term has an initial and final vowel and in between there is a consonant, except in (e) which has two final vowels only.

10. In other terms have vowel and consonant appearing alternately except (c) which has three vowels at the end.

11. The series is : Z (Y) X (W) V (U) T (letters in brackets indicate letters skipped)

12. The series is : F (GH) I (JK) L (MN) O (PO) R

13. The series is : E (FG) H (IJK) L (MNOP) Q (RSTUV) W

14. The series is : G (HI) J (KL) M (NO) P (QR) S

15. The series is : Z (YX) W (VU) T (SR) Q (PO) N

16. Backward numbering of alphabet, i.e. A = 26, B = 25, C = 24, D = 23, E = 22 C = 3, B = 2, A = 1. Hence GHI = 20-19-18

17. Same as Question 16. Hence (b) should have following letter-number combination: LMP = 15-14-11

18. Same as Question 16 & 17. Hence FGH = 21-20-19

19. The word is 'CHAMBER'

20. The word is 'MARSHAL'

21. The word is 'PASCAL'

22. The word is 'DECADE'

23. The word is 'ARYABHATA'

24. First term is reverse order of the second term.

25. Every letter stands for its immediately following letter in alphabetic order, i.e. F is next to G, O is next to P, C is next to D, U is next to V, S is next to T, and so on.

26. Every letter stands for its immediately preceding letter in alphabetic order, i.e. D = C, E = D, L = K, H = G, I = H and so on.

27. Every letter stands for the second following letter i.e. P (Q) R, H (I) J, O (P) Q, E (F) G, and so on.

28. Every letter stands for its preceding letter, i.e. Q = P, J = I, M = L, P = O, U = T and so on.

29. To attempt this question, we have to first alphabetise the letters given in the question and then reverse their order, i.e.

First alphabetise them as : B B D H H M O Q Q U X Z

Now reverse their order as : Z X U Q Q M H H D B B

Questions 29 to 32 can now be easily solved.

33. The word 'BREAD' is coded as per following schemes:

(a) First last three letters are written in the same order and the remaining letters are added by reversing their order. Hence : BREAD = E A D R B

(b) Each letter stands for its next letter, B = C, R = S, etc.

(c) Each letter stands for its preceding letter, and written in backward sequence.

(d) Letters are reversed : B R E A D = D A E R B

(e) Each letter stands for following fifth letter, i.e. skipping three intervening letters. B (cde) F, R (stu) V, E (fgh) I, A (bcd) E, D (efg) H and the letter is written in reverse order.

In Question 33, scheme (e) is applied.

34. Scheme (d) is applied.

35. Scheme (a) is applied.

36. Scheme (b) is applied.

37. Scheme (c) is applied.

38. Scheme (b) is applied.

39. Two intervening letters are skipped, A (BC) D, B (CD) E, and same relation exists in (d), i.e. P (QR) S, Q (RS) T

40. Three intervening letters are skipped, A (BCD) E, B (CDE) F and same relation exists in (e) G (HIJ) K, H (IJK) L

41. One intervening letter is skipped, M (N) O, P (Q) R and same relation exists in (d) C (D) E, F (G) H.

42. Two intervening letters are skipped, LM (NO) PQ and same relation exists in (c) RS (TU) VW

43. Column I has a letter set in which there are two vowels in the middle. This relationship exists only in (c).

44. Column I has a letter set which has one initial and one final vowel and in between there are two consonants. This relationship exists in (e).

56. Number of letters in each word is multiplied by two, e.g. SCOOTER has seven letters, hence $7 \times 2 = 14$.

57. Letters are serially numbered from 1 to 9.

58. Each letter is numbered according to its position number in the alphabet. Letter P is 16th letter of the alphabet.

59. Position numbers of letters in alphabetic order are taken.

60. Position numbers of letters are added up and multiplied by two

$$OPQ = (15 + 16 + 17 = 48 \times 2) = 96$$

$$RST = (18 + 19 + 20 = 57 \times 2) = 114$$

$$GHI = (7 + 8 + 9 = 24 \times 2) = 48$$

61. Position numbers of letters are added up and multiplied by two, i.e. C A R
 $= 3 + 1 + 18 + = 22 \times 2 = 44$.

$$BUS = 2 + 21 + 19 = 42 \times 2 = 84 \text{ and therefore}$$

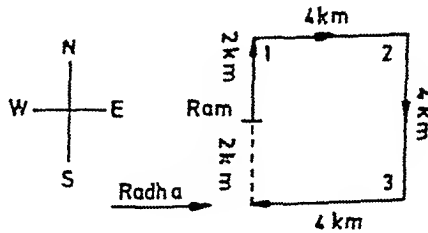
$$TRUCK = 20 + 18 + 21 + 3 + 11 = 73 \times 2 = 146$$

62. In the code F = Z, O = P, R = D, E = M, S = L, T = T, H = N and A = K. Hence 'THERE' will be coded as 'T N M D M'.

63. Every letter in the code stands for second following letter in the alphabetic order, i.e. skipping one intervening letter, and in place of vowels (for all five vowels) letter 'X' is used. Hence: P = (Q) R, I = X, L = O = X and T = (U) V.

Questions 64-67

For solving these questions, the situation has to be diagrammed as follows:

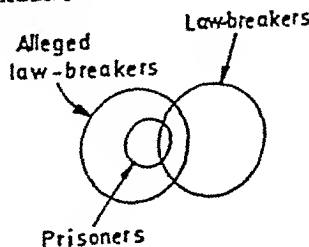


1 = First turn

2 = Second turn

3 = Third turn

68. (e) All Prisoners are Alleged Law-breakers. Some Law-breakers may be Alleged Law-breakers and some may be Prisoners as well. Hence some Law-Breakers may not be Prisoners and Alleged Law-breakers. The following diagram best illustrates the situation:



69. (d)

70. (d)

Answer Key and Explanation

1. (d) The semicircular figure is rotating round the main figure in clockwise direction from one corner to the other. Number of plus signs increase one by one; except (d). To maintain the uniform pattern in figure (d) the semicircular figure should have been on the right hand bottom corner and the four plus signs.

2. (c) The main figure is rotating anticlockwise except in (c) in which it is clockwise hence making it odd figure.

3. (d) Arrow intersects the circle on alternate sides, once downward and once upward and the bottom spherical figure is rotating anticlockwise. In (d) the sequence is not maintained, hence it is odd.

4. (c) The intersecting arrow points inward and outward alternatively and the black dot is moving in clockwise direction from side of the main figure to the other figures. In figure (c) the arrow should have been pointing inward and the dot should have been on the top right hand side.

5. (d) Inner lines are increasing one by one. In (d) there should have been four lines to maintain uniformity.

6. (d) Small dots are reducing one by one and the head of the pin turns left and right alternatively. In (d) there should be seven dots and the head of the pin on other side.

7. (c) The square is rotating clockwise and the small circle shades alternately. The inner arrow changes sides alternately. In (c) the square should have been on the right hand side inclined downward and the position of the arrow as per figures (a) and (e) to maintain uniformity.

8. (d) In all the sphere is moving clockwise, the arrow change sides alternately.

9. (d) Bigger 'hand' with arrow is fixed. Smaller 'hand' is rotating clockwise at 90 degree at a time.

10. (d) 'Hand' with circular head is rotating anticlockwise and 'hand' with arrow head is rotating anticlockwise; both move 90 degree at a time.

11. (d) One small line from vertical arrows is shedded one by one from left towards right and prefixes to horizontal lines towards bottom.

12. (d) Set of dots while moving anticlockwise reduce by one at a time. 'Plus' sign moves clockwise and increase by one at a time. Movement takes place around the four sides of the square.

13. (c) Double walled figure become single-lined figure and one line is added to the centre. Hence after Problem Figure 3, Answer Figure (c) should come.

14. (c) Triangle and Square moves clockwise and anticlockwise respectively.

15. (d) Black dot outside slides clockwise. 'Plus' sign also slides clockwise but goes in and out the main figure alternately. The arrow points outside and inside alternately. The small circle inside moves from one angle to the other in clockwise direction.

16. (d) The intersecting arrow points in and out alternately and slides clockwise along the main figure.

17. (c) Black dot outside moves clockwise covering a quarter at a time. The small circle inside also moves clockwise covering a quarter at a time. The intersecting 'pin' moves diagonally pointing inside and outside alternately.

18. (d) Bigger 'hand' is rotating clockwise at 45 degree at a time. Smaller 'hand' rotates clockwise at 90 degree at a time.

19. (d) 'Arrow' hand is rotating clockwise at 45 degree at a time. 'Shaded square' hand is rotating clockwise at 90 degree at a time. Hand with 'circular head' is rotating clockwise at 45 degree at a time.

20. (e) Dots in top section increase by one a time while they reduce in the bottom section one by one. Other signs are detractors.

(c) SREDEAR

(e) None

21. DB : HF :: TR : ?

(a) OP

(c) WX

(e) YW

22. AEH : HLO :: OSV : ?

(b) VZA

(c) PQR

(e) None

23. CEH : DFI :: FHK : ?

(a) PQR

(c) QST

(e) LMQ

(d) SREDREA

(b) QR

(d) PR

(b) IMP

(d) RST

(b) PRU

(d) OQT

DIRECTIONS: In Questions 24-28, each question consists of five group of letters marked a-e. Four of these group of letters are inter-related and one is different. Find the odd one :-

24. (a) BGL

(c) QVA

(e) KOT

25. (a) EHL

(c) SVZ

(e) FIM

26. (a) ZXU

(c) XVS

(e) VTQ

27. (a) A : B

(c) 4 : 5

(e) D : C

28. (a) aB EF ij

(c) pQ TU yz

(e) gH KL op

(b) GLQ

(d) CHM

(b) LOS

(d) EHL

(b) YWT

(d) IMR

(b) 1 : 2

(d) R : S

(b) bC FG jk

(d) tU XY bc

DIRECTIONS: In Questions 29 to 34, there are five words marked a-e. Four of these words are inter-related in some way or the other and one is different. Find the odd one:-

29. (a) Telegram

(c) Phonogram

(e) Hexagram

30. (a) Prologue

(c) Dialogue

(e) Homologue

31. (a) The Tribune

(c) The Indian Express

(e) The Blitz

32. (a) Vespa scooter

(c) Hero Honda motorcycle

(e) Vijay Super scooter

(b) Cablegram

(d) Aerogram

(b) Monologue

(d) Epilogue

(b) The Dainik Tribune

(d) The Nav Bharat Times

(b) Hero Majestic Moped

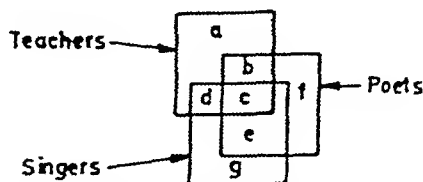
(d) Hero Cycle

33. (a) Physiology (b) Biology
(c) Zoology (d) Geology
(e) Bacteriology
34. (a) Pentagon (b) Hexagon
(c) Nanogon (d) Octagon
(e) Dragon

DIRECTIONS: If every alternative letter of English Alphabet from B onwards (including B) is written in lower case (small letters) and the remaining letters are capitalised, then :

35. How the last month of the first half of the year will be written?
(a) JuNE (b) JuNe
(c) jUnE (d) JUne
(e) DeCeMeBeR
36. How the first month of the second half of the year will be written?
(a) AuGuSt (b) JuLY
(c) JuLy (d) JULy
(e) jUIY
37. How many vowels will be written in lower case (small letters)?
(a) 3 (b) 2
(c) 1 (d) None
(e) 4
38. How many vowels will be written in capital letters?
(a) 1 (b) 2
(c) 3 (d) 5
(e) None

DIRECTIONS: In the following diagram (Fig. 1) there are three squares interlocking each other. Each square represents a certain class. Study the diagram and answer the questions that follow:



39. Teachers who are poets but not singers are represented by letter ____
(a) f (b) g
(c) d (d) b
(e) c
40. Poets who are neither teachers nor singers are represented by letter ____
(a) g (b) d
(c) f (d) h
(e) c
41. Which letter represents poets and singers who are not teachers?
(a) g (b) f
(c) d (d) b
(e) c

42. Which letter represents teachers who are singers but not poets?

- (a) b (b) c
(c) d (d) e
(e) f

43. Which letter represents teachers who are poets as well as singers?

- (a) c (b) d
(c) e (d) f
(e) b

DIRECTIONS: Teenu starts from point 'A' and drives 2 km towards north. He then turns to his left and drives 3 km and after taking another turn to his left he drives 2 km and finishes at point 'B'. From this point Minoo starts driving to his north. He drives 2 km towards north and takes his right turn and drives another 3 km. He then again turns to his right hand and drives 2 km and reaches point 'A'. Based on this information answer the following questions:

44. How far is point A from point B if both the points are in open ground requiring no turns?

- (a) 7 km (b) 5 km
(c) 3 km (d) 2 km
(e) Cannot be ascertained from the information given.

45. When Minoo takes his second turn, he should be driving towards _____?

- (a) North (b) North-east
(c) West (d) East
(e) South

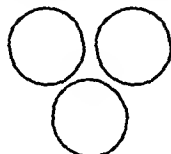
46. After the first turn, in which direction Teenu will be driving?

- (a) North (b) North-east
(c) West (d) East
(e) South

47. While finishing, Minoo will be driving towards _____?

- (a) North (b) South-east
(c) West (d) South
(e) East

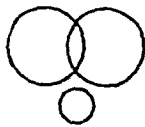
DIRECTIONS : You are required to choose from the five diagrams marked a-e the one that illustrates the relationship among three given classes in questions 63 to 70. The sizes of the circles do not indicate relative sizes of classes.



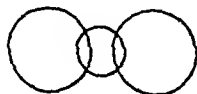
(a)



(b)



(c)



(d)



(e)

48. Professionals, Doctors, Engineers

49. Smokers, Lawyers, Non-smokers

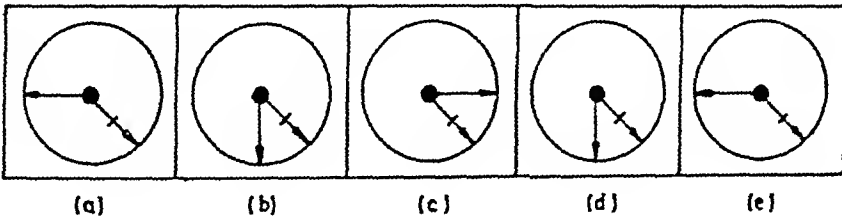
- 50. Students, Children, Animals
- 51. Vehicles, Trucks, Cars
- 52. Fruits, Fish, Eatables
- 53. Pets, Dogs, Birds
- 54. Shirts, Bedsheets, Towels
- 55. Mammals, Cows, Crows

K-100

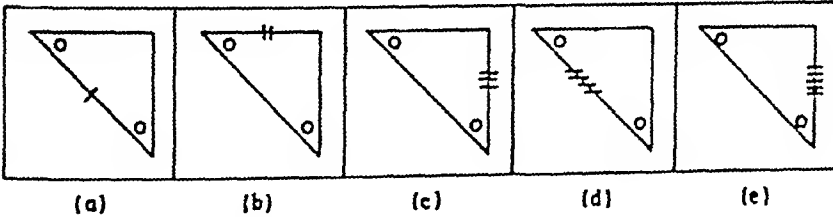
NON-VERBAL TESTS

DIRECTIONS: Four of the five figures marked a-e are alike in some way or the other and one is different from the rest. You have choose the figure which is different (odd):

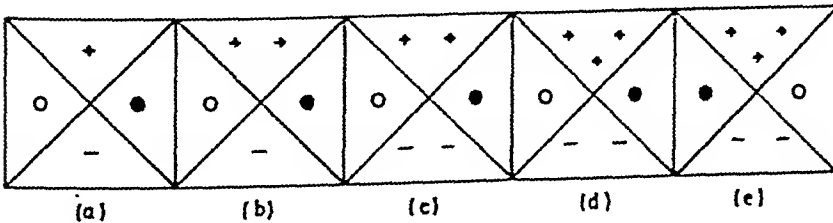
1.



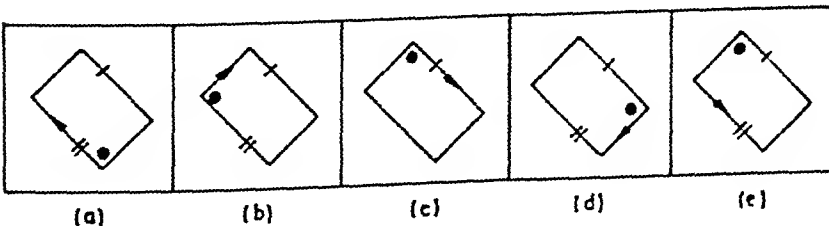
2.



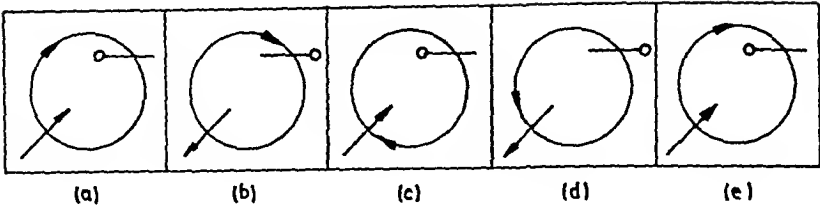
3.



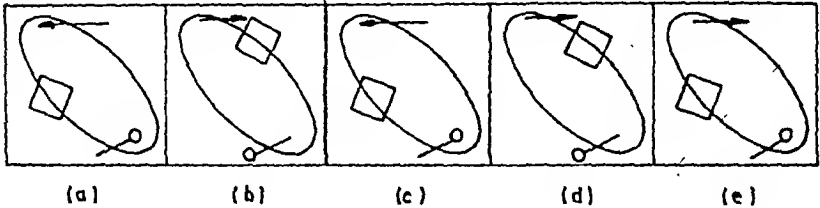
4.



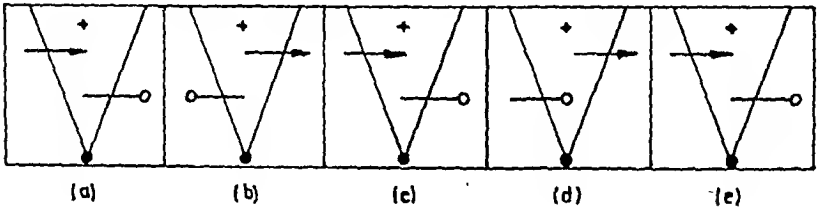
5.



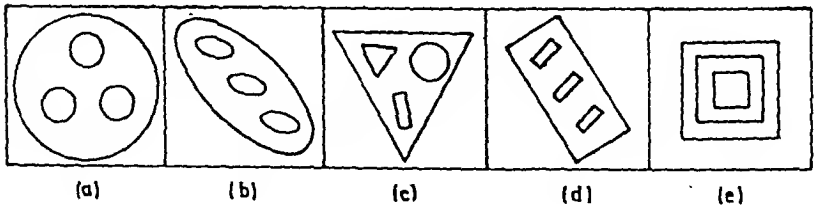
6.



7.



8.



DIRECTIONS: If a square sheet of paper is folded two times from the centre and cuts are given as shown in the **PROBLEM FIGURE**, how will it appear when it is opened? Select appropriate figure from **ANSWER CHOICES** marked a-e:

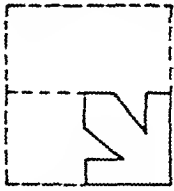
9.

10.

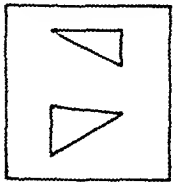
11.

12.

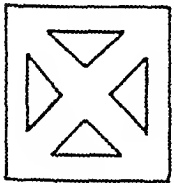
PROBLEM FIGURE



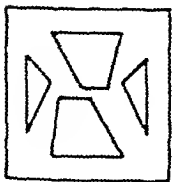
ANSWER FIGURES



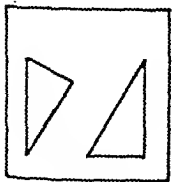
(a)



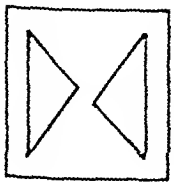
(b)



(c)

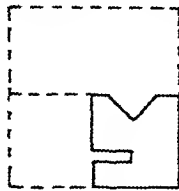


(d)

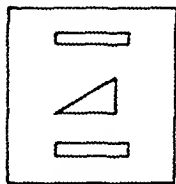


(e)

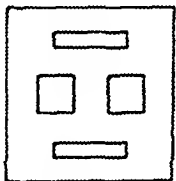
PROBLEM FIGURE



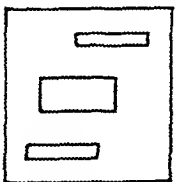
ANSWER FIGURES



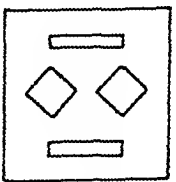
(a)



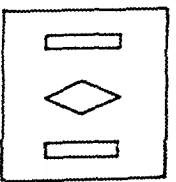
(b)



(c)

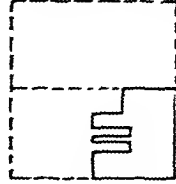


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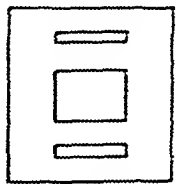


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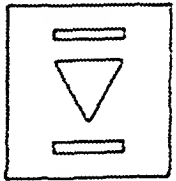
PROBLEM FIGURE



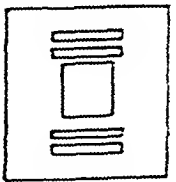
ANSWER FIGURES



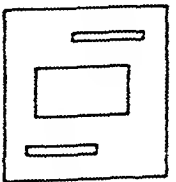
(a)



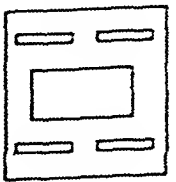
(b)



(c)

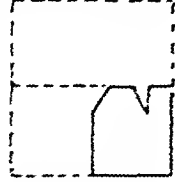


(d)

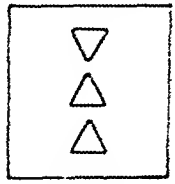


(e)

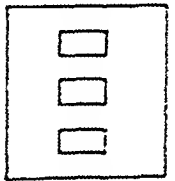
PROBLEM FIGURE



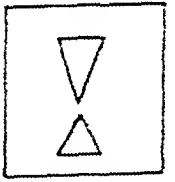
ANSWER FIGURES



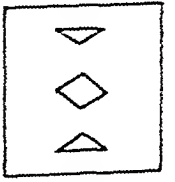
(a)



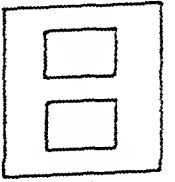
(b)



(c)



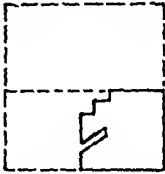
(d)



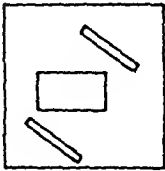
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13.

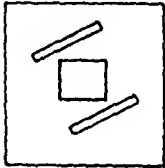
PROBLEM FIGURE



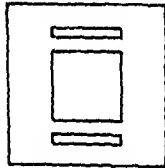
ANSWER FIGURES



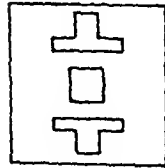
(a)



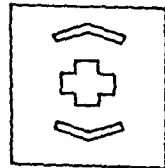
(b)



(c)



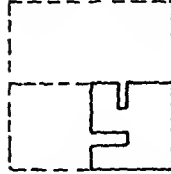
(d)



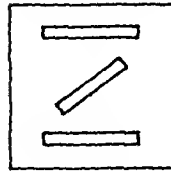
(e)

14.

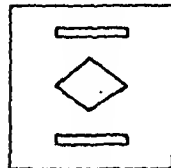
PROBLEM FIGURE



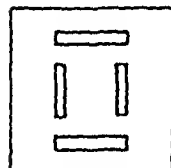
ANSWER FIGURES



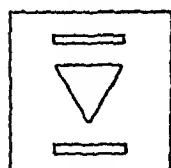
(a)



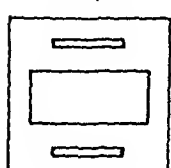
(b)



(c)



(d)

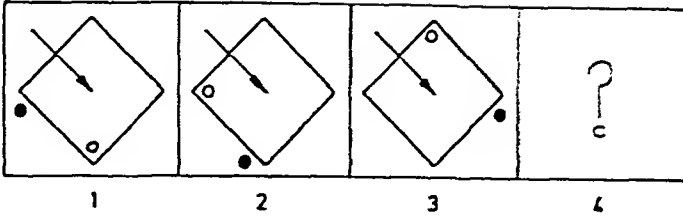


(e)

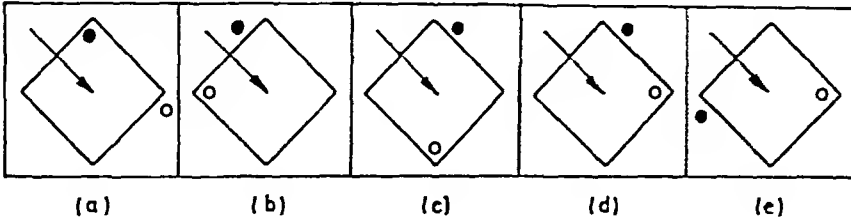
DIRECTIONS: Name the serial number of the figure in the ANSWER FIGURE column marked a-e which will complete the series, i.e. fit in the last column (No. 4) of the PROBLEM FIGURES:

15.

PROBLEM FIGURES

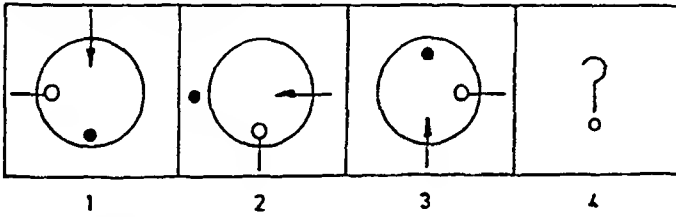


ANSWER FIGURES

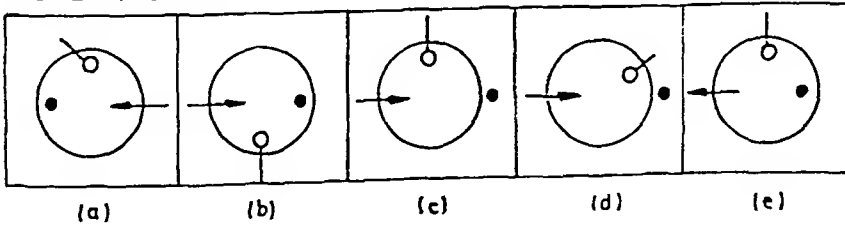


16.

PROBLEM FIGURES

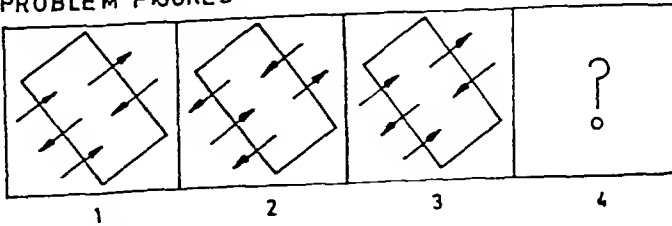


ANSWER FIGURES

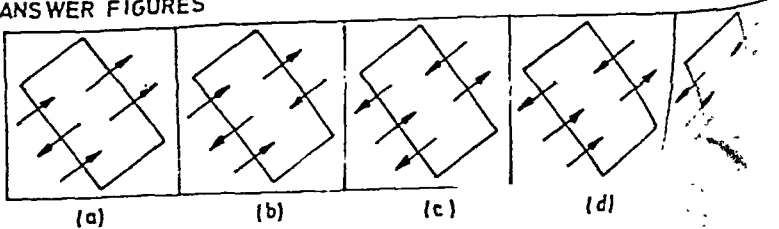


17.

PROBLEM FIGURES

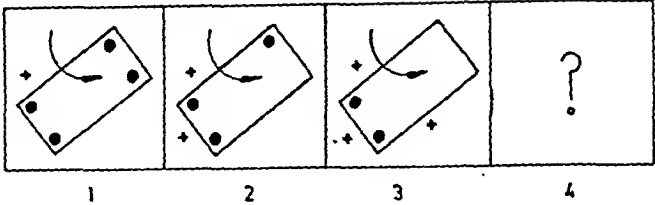


ANSWER FIGURES

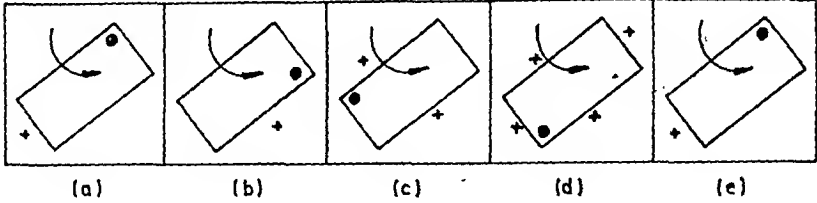


18.

PROBLEM FIGURES

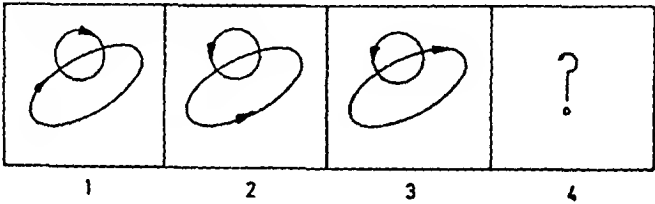


ANSWER FIGURES

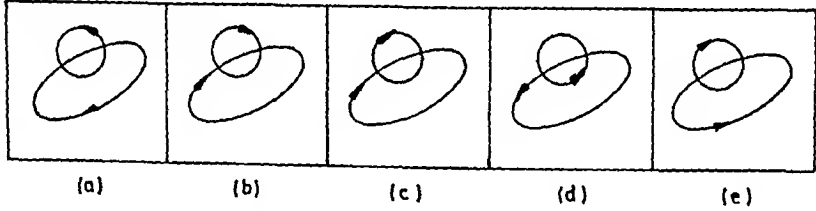


19.

PROBLEM FIGURES

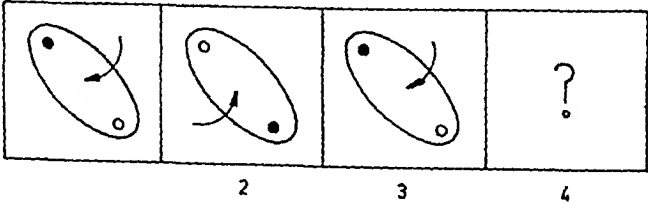


ANSWER FIGURES

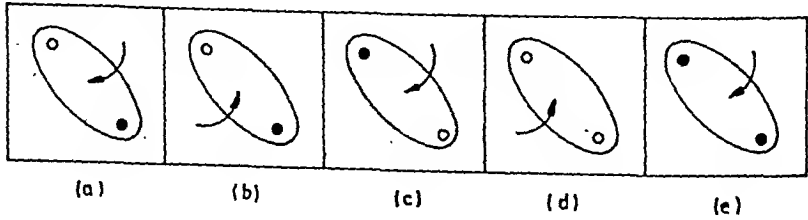


20.

PROBLEM FIGURES



ANSWER FIGURES



ANSWERS AND EXPLANATIONS

1. (c) The series is : abb, abb, abb, abb
2. (e) The series is : aabbaa, aabbaa
3. (c) The series is : baa, baa, baa, baa
4. (e) The series is : bab, bab, bab, bab
5. (c) The series is : lmn, lmn, lmn
6. (d) The series is : rstuv, rstuv
7. (e) The series is : aba, aba, aba, aba
8. (d) The series is : mba, mba, mba, mba, mba
9. (c) Each term consists of one letter from left and one from right hand side. Alphabetic order is maintained.

A B C D E R Q P O N

10. (d) Two letters from right hand side towards left and one letter from left hand side towards right are taken in each term.

AB CD EF GH Q P O N

11. (d) Two letters from left hand side towards right and one letter from right hand side towards left are taken in each term.

A B C D R Q P O N

12. (c) Two letters from left with one intervening letter skipped and two letters from right with one intervening letter skipped are taken in each term.

A B C D E F G H S R Q P O N

13. (a) Two letters from right towards left and two letters from left towards right are taken, e.g. ON AB

14. (d) The word arranged according to directions will appear as follows:
P A C O R T C E L E R D I O G R A H S

15. (d) 16. (b) 17. (a) 18. (b)

19. (b) Each term consists of three letters in alphabetic order but written in reverse order, i.e. KLM = MLK, RST = TSR

20. (b) The word of the first term is reversed in the second term.

21. (c) In each term one intervening letter is skipped and the letters written in reverse order, i.e. DB = D (C) B, HF = H (G) F, TR = T (S) R and same relationship exists in (e), i.e. Y (X) W. Letters in brackets are the ones skipped.

22. (b) In each term letters are skipped in a regular sequence, first three and then two letters are skipped, i.e. A (BCD) E (FG) H, H (IJK) L (MN), O (PQR) S (TU) V and same relationship exists in (b) I (JKL) M (NO) P

23. (d) In each term first one letter and two letters are skipped i.e. C (D) E (FG) H, D (E) F (GH) I, F (G) H (IJ) K and O (P) Q (RS) T

24. (c) In all terms four intervening letters are skipped but not in (e). B (CDEF) G (HIJK) L and so on.

25. (c) In all terms first two and then three letters are skipped but not in (e). E (FG) H (IJK) L and so on.

26. (d) In all terms first one and then two letters are skipped and letters are written in reverse order, e.g. Z (Y) X (WV) U

27. (c) Each term consist of a letter or digit followed by its immediately following letter or digit.

28. (e) Each term follows the skipping pattern as aB (cd) EF (gh) ij i.e. immediately following two letters are skipped and alphabetic sequence is maintained. Combination of small and capital letters is also in same order in all the terms.

29. (c) All other are means of communication whereas (e) is a six pointed star like figure formed by two equilateral.

30. (c) All relate to discourse/speech/dramas whereas Homologous is something similar in structure.

31. (c) All other are dailies whereas (e) is a weekly.

32. (d) All other are motor driven two-wheelers.

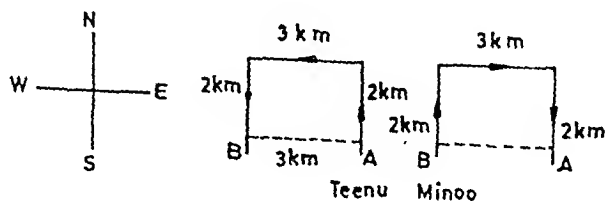
33. (d) All are sciences dealing with living bodies, GEOLOGY deals with earth.

34. (e) All are polygons having different number of angles (e) is an arm.

35. (c) 36. (e) 37. (d) 38. (d) 39. (d)

40. (c) 41. (c) 42. (c) 43. (a)

For questions 59 to 62, by diagramming the situation, the questions can be easily answered:



44. (c) 45. (c) 46. (c) 47. (d)
 48. (c) 49. (d) 50. (c) 51. (c)
 52. (c) 53. (d) 54. (a) 55. (b)

Answers And Explanations

1. (d) Intersected hand is fixed. The other hand is moving anticlockwise covering a quarter (90 degrees) at a time.

2. (c) The intersecting lines are increasing one by one and intersect the sides turn by turn in clockwise direction.

3. (e) When plus sign (+) increases minus sign (-) remains constant and minus sign increases plus sign remains constant.
4. (e) The dot is moving in clockwise direction.
5. (d) The main circle in all others are moving in clockwise direction.
6. (e) The arrow points out/in alternately.
7. (d) The pin at the bottom turns out changing sides of the main figure. In (d) it is pointing inside.
8. (c) All have three smaller versions of themselves inside the main figure. In (c) the inner figures are not versions of the outer figure.
9. (b) 10. (d) 11. (c) 12. (d) 13. (e) 14. (c)
15. (d) The black dot is moving anticlockwise and small circle is moving clockwise.
16. (c) the pin intersecting the circle is moving anticlockwise and the arrow is moving clockwise. The dot moves in clockwise direction, alternately going in and out of the circle.
17. (c) Alternate figures are repeating.
18. (d) Dot reduce one by one in anticlockwise direction and plus (+) sign is added up in anticlockwise direction.
19. (d) Alternate figures are repeating.
20. (b) Alternate figures are repeating.

TEST PAPER THREE

DIRECTIONS: In each of the following five group of letters marked a-e, one is different from others. You have to find the odd one out

- | | |
|-------------|----------|
| 1. (a) aBC | (b) BaC |
| (c) abC | (d) BCa |
| (e) CBa | |
| 2. (a) KMpS | (b) BKXz |
| (c) PiMO | (d) PHet |
| (e) OISt | |
| 3. (a) LNMO | (b) SUTV |
| (c) EUFV | (d) GWHX |
| (e) CRDT | |
| 4. (a) PaKe | (b) PiuS |
| (c) PoKe | (d) Poek |
| (e) PrtK | |
| 5. (a) SSTO | (b) TTOU |
| (c) OOTU | (d) USTO |
| (e) UUTS | |
| 6. (a) BATU | (b) ZYST |
| (c) SRPQ | (d) FEGH |
| (e) IJSO | |
| 7. (a) aabC | (b) ccdE |
| (c) eefG | (d) ffiH |
| (e) gghI | |
| 8. (a) TSRQ | (b) MLKJ |
| (c) YXWV | (d) HGFD |
| (e) NMLK | |
| 9. (a) abCD | (b) efGH |
| (c) rsTU | (d) mmOP |
| (e) IJkl | |
| 10. (a) LNP | (b) JLN |
| (c) PRT | (d) ACE |
| (e) PBT | |

DIRECTIONS: Questions 11 to 20 consist of letter series sets. Each set of letters consists of combination of small and capital letters with certain intervening letters skipped and/or repeated. Select appropriate choice from choices a-e to fill in the blanks in each question.

11. ABC abc DEF ____
- | | |
|---------|---------|
| (a) ghi | (b) GHI |
| (c) ABC | (d) def |
| (e) IJL | |
12. ACF acf G ____
- | | |
|-------------|-------------|
| (a) IL gi l | (b) JL gi l |
| (c) IL gj l | (d) LL Gl i |
| (e) KL mn | |
13. a ccc c A CCC E ____

- (a) f ggg h F GGG H
(c) l mmm q L MMM Q
(e) s rrr t S RRR T

- (b) p sss t P SSS T
(d) g iii k G III K

14. Z XV zxv ____

- (a) TUX tux
(c) Wyz wyz
(e) USQ usq

- (b) UXZ uxz
(d) WYZ wyz

15. AGMS agms ____

- (a) ABCD abcd
(c) BCNT bcnt
(e) PQZY pqzy

- (b) BHNT bhnt
(d) bhnt BHNT

16. a cc eee ____

- (a) ffg
(c) gggg
(e) ijj

- (b) ff
(d) dddd

17. bb nn cc oo ____

- (a) pq
(c) dd
(e) gg

- (b) ef
(d) ee

18. m NN o PP q ____

- (a) rR
(c) RR
(e) ss

- (b) qR
(d) rr

19. mm pp s ____

- (a) VVw
(c) STu
(e) svv

- (b) vvW
(d) ppQ

20. a D g J m P

- (a) sp
(c) sV
(e) vs

- (b) sP
(d) Sv

DIRECTIONS: In Questions 21 to 25 there are two columns. Column I contains capital letters. Column II contains small letters. Each small letter in Column II stands for some capital letter in Column I. The small letters in Column II are not arranged in the same order as their corresponding capital letters in Column I. Decode the underlined capital letters.

Column I

Column II

	(a)	(b)	(c)	(d)	(e)
21. G M S A Y	u	a	g	m	s
22. B S M Y A	s	g	m	v	u
23. C M A Y B	w	g	u	s	v
24. N G M S Y	s	a	g	h	m
25. S Y N A J	m	h	u	d	s

DIRECTIONS: Based on the following code and key scheme, code and decode letters/words in questions 26 to 30

Code: H L M Q U A T Y S H R I N

Key: a c d b e f h i j z y o p

26. QUALITY
 (a) bcgeohr (b) bcgeihr
 (c) bcgeohs (d) bcheij
 (e) befcchi
27. QUART
 (a) bcgyh (b) cfgzi
 (c) bcgyi (d) befyh
 (e) ccfyi
28. SHRIMAN
 (a) izypegq (b) jzyodfp
 (c) jzyodhp (d) jzyoefg
 (e) jzyoegi
29. THIS
 (a) rstu (b) ipoq
 (c) hzoj (d) hzij
 (e) hzoi
30. QUASH
 (a) dchip (b) befjz
 (c) fjzop (d) fhipa
 (e) adbef
31. If 'PRIMARY' is coded as 'Q S J N B S Z' how do you code 'FARMER'?
 (a) HCTOGT (b) GBSNFS
 (c) GBTNFS (d) EZQLDQ
 (e) HDTOGT
32. How will you code 'TRACTER' now?
 (a) USBDUET (b) VSBDRFS
 (c) VTCEVFT (d) USBDUFS
 (e) USCDUGT
33. If 'BAT' = 6, 'CRICKET' = 14 and 'BALL' = 8, then 'FIELDING' = ?
 (a) 14 (b) 12
 (c) 30 (d) 18
 (e) 16
34. 'CYCLE' = 8, 'BUS' = 4, and 'MOPED' = 8, then 'TRUCK' = ?
 (a) 10 (b) 4
 (c) 6 (d) 7
 (e) 8
35. 'DRIVER' = 12, 'PEDESTRIAN' = 20, 'ACCIDENT' = 16, then 'TAXI' = ?
 (a) 4 (b) 8
 (c) 16 (d) 12
 (e) 13

DIRECTIONS: Find out the correct letter pair from the alternatives given in answer choices (a-e) below, to denote same relationship among the group of letters as established between the sets at the top to fill in blank.

36. ZA : YB :: XC : ____
 (a) YZ (b) NM
 (c) BC (d) OP
 (e) WD
37. ABCD : WXYZ :: EFGH : ____

- (a) STVU
(c) STUE
(e) STUV

- (b) STOU
(d) TSUV

38. AD : BE :: CF : __

- (a) DE
(c) DG
(e) GD

- (b) BC
(d) FG

39. ACDE : OGHI :: ESTU : ____

- (a) EPLU
(c) OGHK
(e) ZXZE

- (b) ABCD
(d) XYZE

40. BAC : DEF :: ____ : NOP

- (a) GHI
(c) IGH
(e) HHJ

- (b) GIH
(d) HJI

DIRECTIONS: Rearrange the following jumbled letters and mark the last letter of the rearranged word from answer choices a-e. (Against every jumbled group of letters a hint is given to help you arrive at correct choice easily.)

41. A T L R O P C I (Related to Geography)

- (a) P
(c) A
(e) L

- (b) R
(d) I

42. H H H A A A S J N (Related to Indian History)

- (a) J
(c) S
(e) A

- (b) H
(d) N

43. G O I E L L A (Related to Physics/Astronomy)

- (a) G
(c) I
(e) O

- (b) L
(d) E

In questions 44 to 47 you have to mark the initial letter of the rearranged word:-

44. P R H O U L S (Related to Chemistry)

- (a) L
(c) R
(e) U

- (b) H
(d) S

45. L A A P S C (Related to Computers)

- (a) L
(c) P
(e) C

- (b) S
(d) A

46. L B O A C (Related to Computers)

- (a) B
(c) O
(e) L

- (b) A
(d) C

47. E M S L H T U A (Related to Economics)

- (a) A
(c) T
(e) M

- (b) U
(d) S

48. T N O N W E (Related to Physics)

- (a) E (b) T
(c) N (d) E
(e) W

DIRECTIONS: Questions 49 to 54 are based on the following set of letters.

P M P A Q R O P Q R E S O T A P Q E O A P A P A Q E O

49. If all vowels are eliminated which letter will come exactly in the centre:-

- (a) Q (b) P
(c) R (d) T
(e) None

50. Which consonant has maximum vowels preceding it?

- (a) T (b) Q
(c) R (d) P
(e) M

51. How many P's are there which are preceded by vowel but not followed by vowel?

- (a) 1 (b) 2
(c) 3 (d) 4
(e) None

52. Which consonants have equal frequency?

- (a) PMR (b) MSQ
(c) MST (d) PQR
(e) TMR

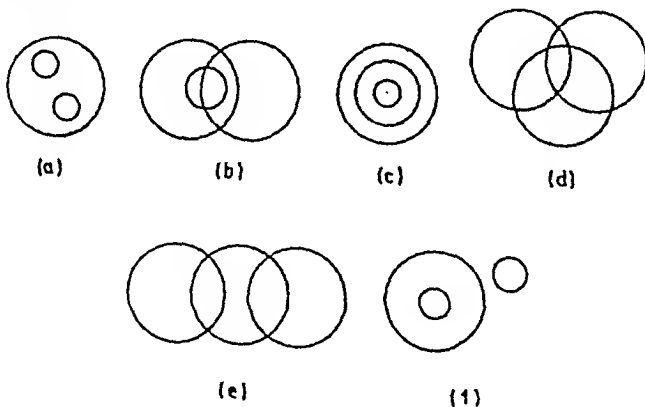
53. Which consonant/vowel combination has the maximum frequency?

- (a) AQ (b) EP
(c) OP (d) AP
(e) QO

54. If all vowels are eliminated, which letter will have two preceding and two final letters in correct alphabetic order?

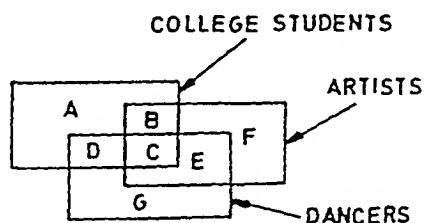
- (a) S (b) P
(c) Q (d) R
(e) None

DIRECTIONS: Questions 55 to 64 are based on the following diagrams, marked a-f, each diagram representing various types of relationships. Select the diagram that best represents the relationship between various classes of people/items mentioned in following questions



55. Hospital Staff, Nurses, Doctors
56. Doctors, Surgeons, Physiotherapists
57. Bidi smokers, Smokers, Cancer patients
58. Christians, Catholics, Church-goers
59. Christians, Catholics, Pope
60. Educated people, Professors, Rich people
61. Illiterates people, Poor people, Unemployed
62. Alleged Terrorists, Prisoners, Terrorists
63. Typewriters, Electric Typewriters, Electronic Typewriters
64. Doctors, Surgeons, Married people

DIRECTIONS: Questions 65 to 70 are based on the following diagram where each square represents a class/group of people



65. College Students who are Artists but not Dancers are represented by:
 - (a) A
 - (b) B
 - (c) C
 - (d) D
 - (e) F
66. Artists who are neither Dancers nor College Students are represented by:
 - (a) A
 - (b) B
 - (c) C
 - (d) F
 - (e) E
67. College Students who are Dancers but not Artists are represented by:
 - (a) B
 - (b)
 - (c) C
 - (d) E
 - (e) D
68. College Students who are Artists as well as Dancers are represented by:
 - (a) B
 - (b) C
 - (c) D
 - (d) E
 - (e) D
69. College Students who are Dancers and Artists both are represented by:
 - (a) B
 - (b) A
 - (c) D
 - (d) C
 - (e) E
70. College Students who are neither Dancers nor Artists are represented by:
 - (a) B
 - (b) D
 - (c) A
 - (d) E
 - (e) C

48. T N O N W E (Related to Physics)

- (a) E
(c) N
(e) W

- (b) T
(d) E

DIRECTIONS: Questions 49 to 54 are based on the following set of letters.

P M P A Q R O P Q R E S O T A P Q E O A P A P A Q E O

49. If all vowels are eliminated which letter will come exactly in the centre:-

- (a) Q
(c) R
(e) None

- (b) P
(d) T

50. Which consonant has maximum vowels preceding it?

- (a) T
(c) R
(e) M

- (b) Q
(d) P

51. How many P's are there which are preceded by vowel but not followed by vowel?

- (a) 1
(c) 3
(e) None

- (b) 2
(d) 4

52. Which consonants have equal frequency?

- (a) PMR
(c) MST
(e) TMR

- (b) MSQ
(d) PQR

53. Which consonant/vowel combination has the maximum frequency?

- (a) AQ
(c) OP
(e) QO

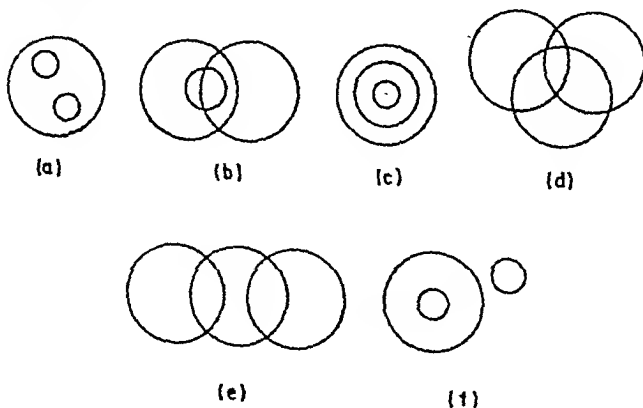
- (b) EP
(d) AP

54. If all vowels are eliminated, which letter will have two preceding and two final letters in correct alphabetic order?

- (a) S
(c) Q
(e) None

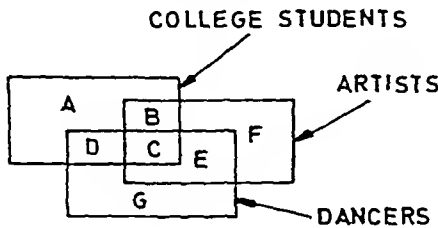
- (b) P
(d) R

DIRECTIONS: Questions 55 to 64 are based on the following diagrams, marked a-f, each diagram representing various types of relationships. Select the diagram that best represents the relationship between various classes of people/items mentioned in following questions



55. Hospital Staff, Nurses, Doctors
56. Doctors, Surgeons, Physiotherapists
57. Bidi smokers, Smokers, Cancer patients
58. Christians, Catholics, Church-goers
59. Christians, Catholics, Pope
60. Educated people, Professors, Rich people
61. Illiterates people, Poor people, Unemployed
62. Alleged Terrorists, Prisoners, Terrorists
63. Typewriters, Electric Typewriters, Electronic Typewriters
64. Doctors, Surgeons, Married people

DIRECTIONS: Questions 65 to 70 are based on the following diagram where each square represents a class/group of people

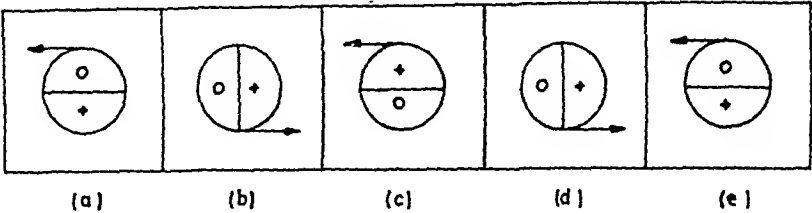


65. College Students who are Artists but not Dancers are represented by:
 - (a) A
 - (b) B
 - (c) C
 - (d) D
 - (e) F
66. Artists who are neither Dancers nor College Students are represented by:
 - (a) A
 - (b) B
 - (c) C
 - (d) F
 - (e) E
67. College Students who are Dancers but not Artists are represented by:
 - (a) B
 - (b)
 - (c) C
 - (d) E
 - (e) D
68. College Students who are Artists as well as Dancers are represented by:
 - (a) B
 - (b) C
 - (c) D
 - (d) E
 - (e) D
69. College Students who are Dancers and Artists both are represented by:
 - (a) B
 - (b) A
 - (c) D
 - (d) C
 - (e) E
70. College Students who are neither Dancers nor Artists are represented by :
 - (a) B
 - (b) D
 - (c) A
 - (d) E
 - (e) C

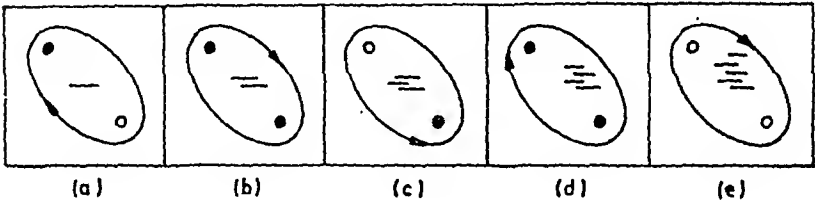
NON-VERBAL REASONING TESTS

DIRECTIONS: In each question there are five figures. Four of these figures are similar or bear some relationship with each other. One is different. You have to find the odd one out.

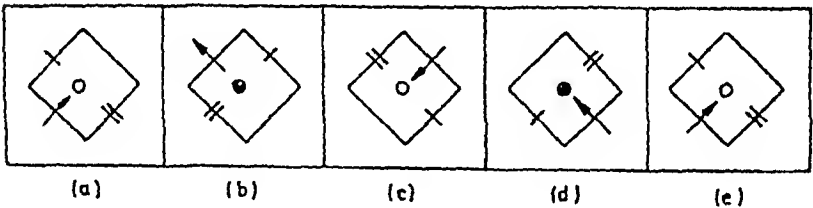
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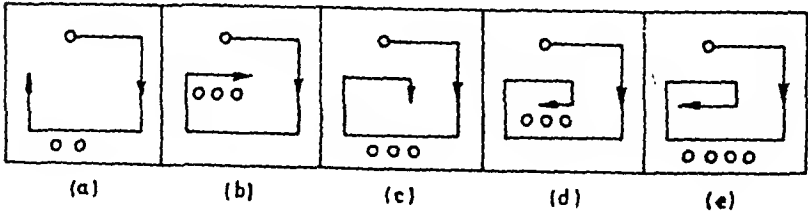
2.



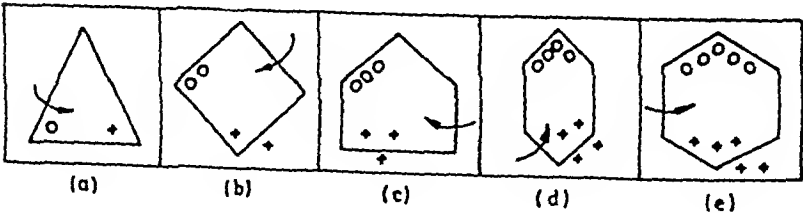
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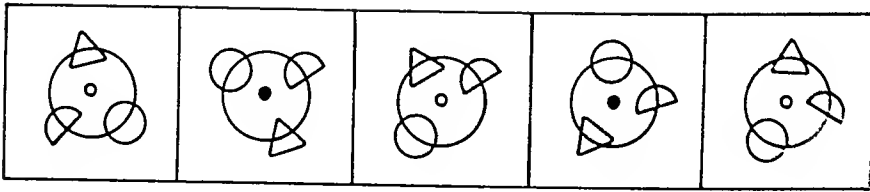


4.



5.





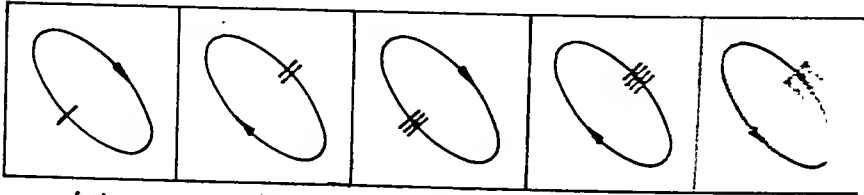
(a)

(b)

(c)

(d)

(e)



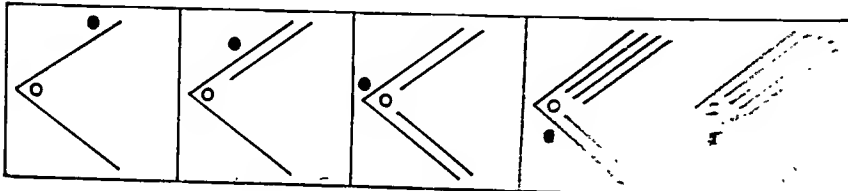
(a)

(b)

(c)

(d)

(e)



(a)

(b)

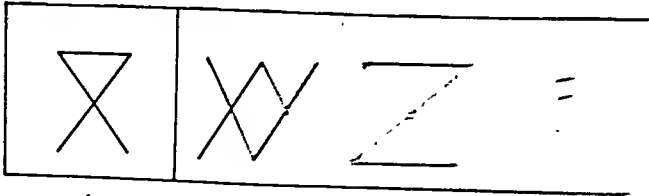
(c)

(d)

(e)

Instructions: Pick one figure from the Answer Figures and fill column 1 of the Problem Figure and fill column 2 appropriately:-

PROBLEM FIGURES

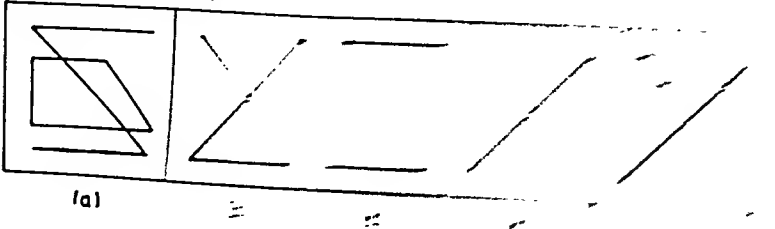


1

2

3

ANSWER FIGURES



(a)

(b)

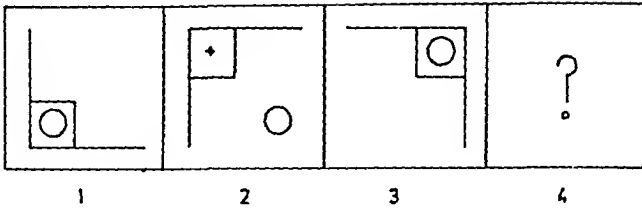
(c)

(d)

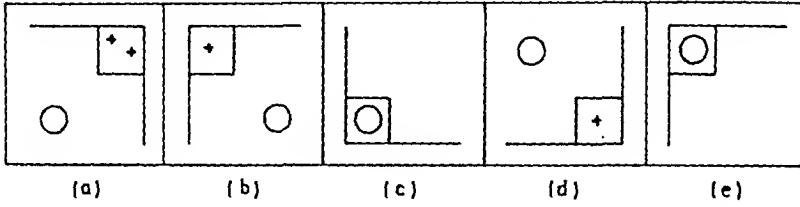
(e)

10.

PROBLEM FIGURES

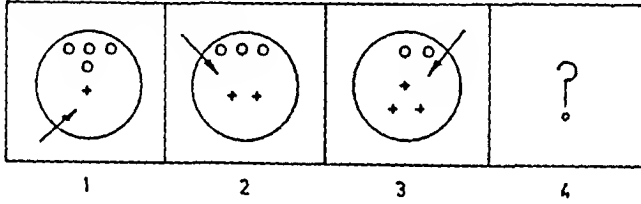


ANSWER FIGURES

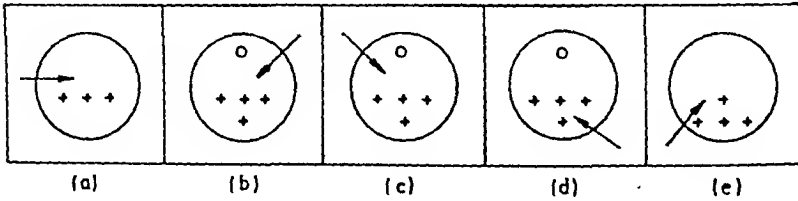


11.

PROBLEM FIGURES

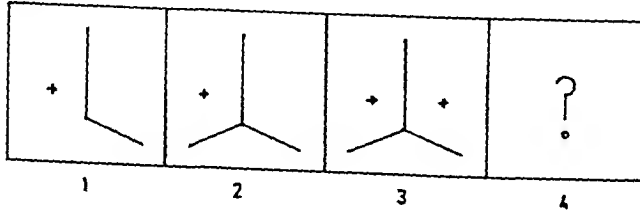


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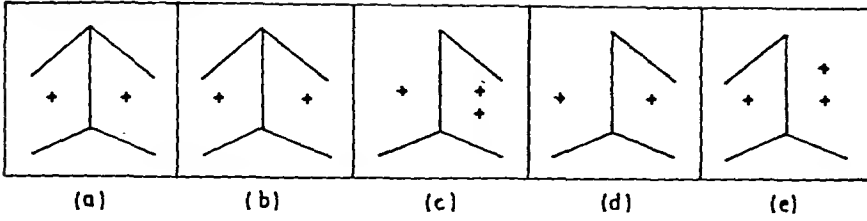


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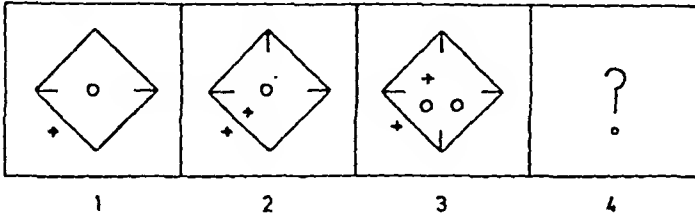


ANSWER FIGURES

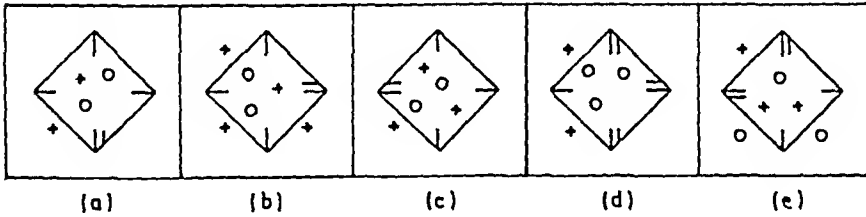


13.

PROBLEM FIGURES

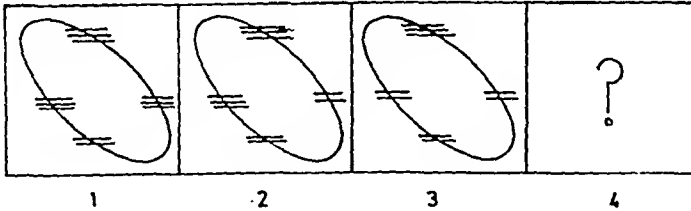


ANSWER FIGURES

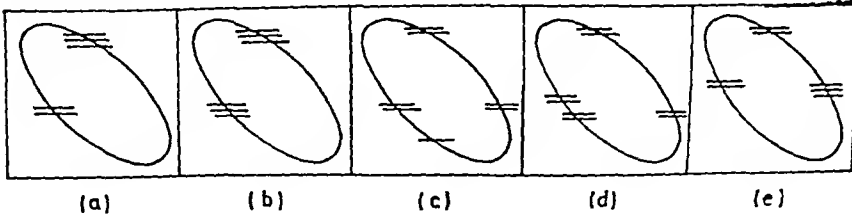


14.

PROBLEM FIGURES

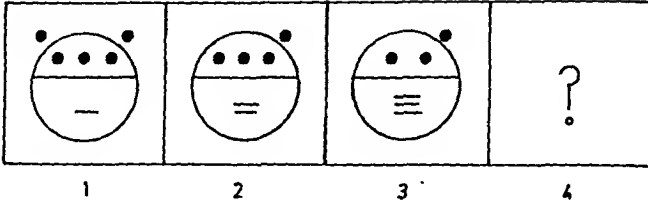


ANSWER FIGURES

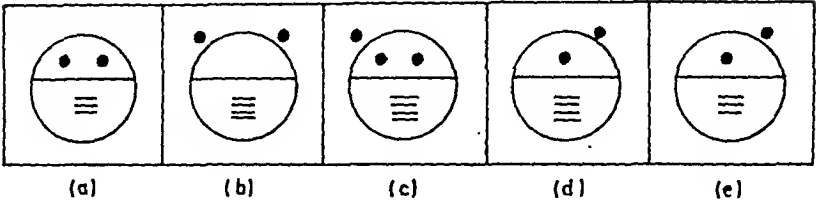


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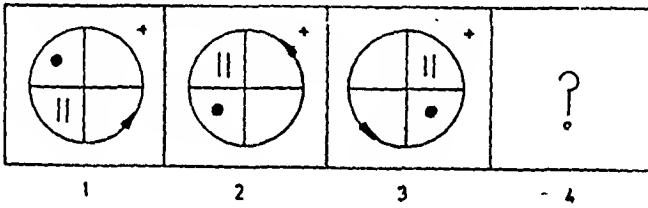


ANSWER FIGURES

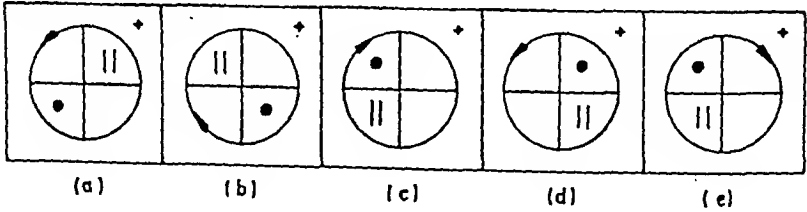


16.

PROBLEM FIGURES

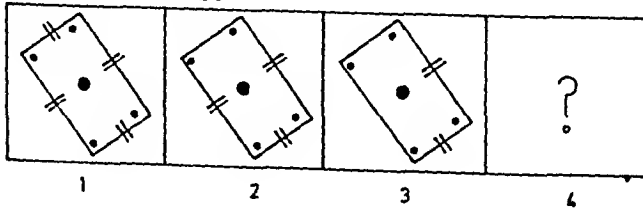


ANSWER FIGURES

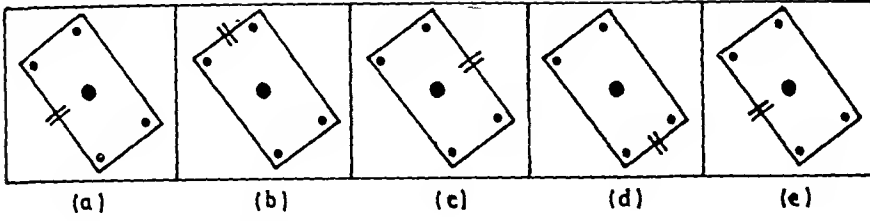


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PROBLEM FIGURES

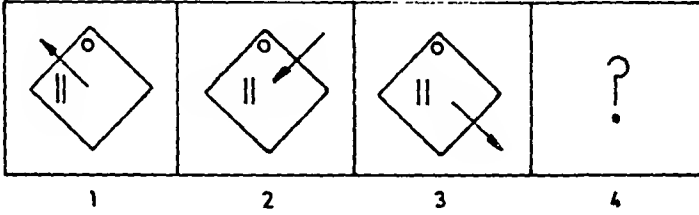


ANSWER FIGURES

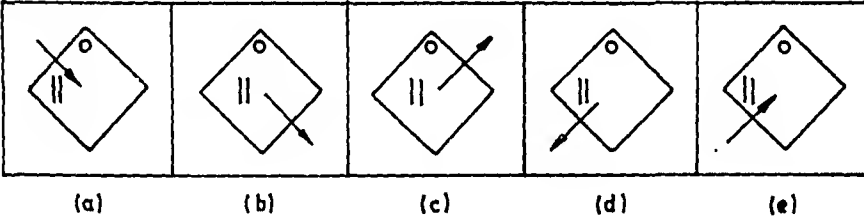


8.

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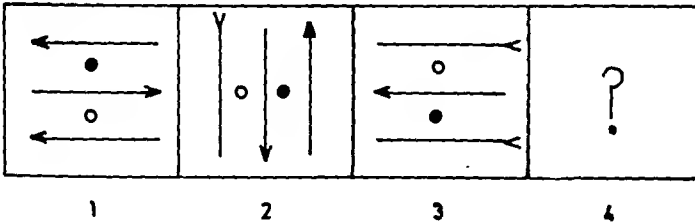


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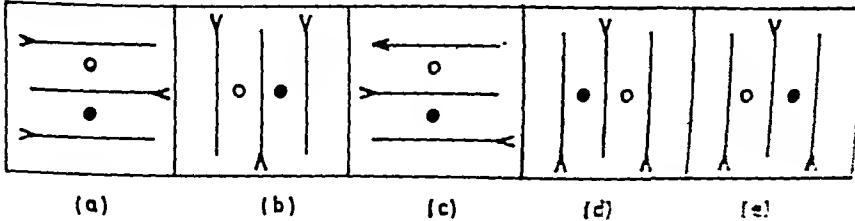


19.

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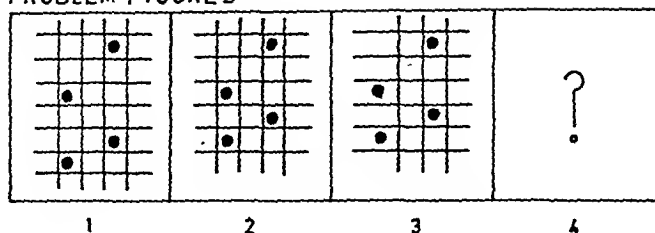


ANSWER FIGURES

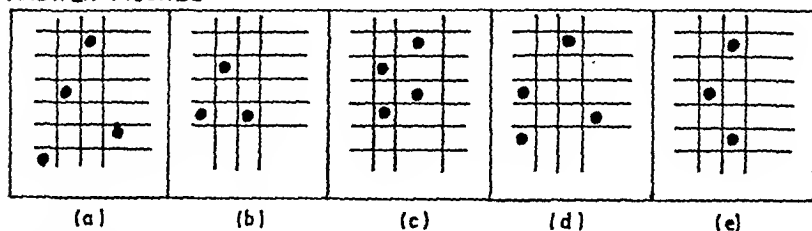


20.

PROBLEM FIGURES



ANSWER FIGURES

*Answers And Explanations*

1. (c) All others have one small letter and two capital letters whereas (c) has two small and one capital letters.

2. (d) All others have only one small and three capital letters, whereas (d) has two capital and two small letters.

3. (c) In all first and third letters and second and fourth letters are in alphabetic sequence, i.e. L N M O, S U T V, E U F V, G W H X.

4. (c) All have two vowels and two consonants, whereas (c) has all consonants.

5. (d) In all first two letters are repeated.

6. (c) In all others first two letters are in backward sequence and next two in forward sequence, i.e. B A G H, Z Y S T, S R P Q and F E G H.

7. (d) In all letters are in alphabetic order having first two letters repeated followed by one small and one capital letters. In (d) letters are not in alphabetic order.

8. (d) In all other letters are in backward alphabetic order.

9. (c) In all others first two letters are small and next two are capital letters, in (c) all are small letters.

10. (c) In all other letter sets one intervening letter is skipped, i.e.

L (M) N (O) P, J (K) L (M) N, P (Q) R (S) T and A (B) C (D) E.

11. (d) First set of three letters is given in capital letters and repeated in small letters keeping the alphabetic order.

12. (a) Series start from a set of capital letters skipping one and then two letters, which is repeated in small letters keeping the alphabetic sequence.

A (B) C (DE) F = ACF acf, G (H) I (JK) L = GIL gil

13. (d) The series is formed by skipping one intervening letter as : a (b) ccc (d) e, A (B) CCC (D) E = a ccc e A CCC E and next will be : g (h) iii (j) k = g iii k G III K

14. (e) Letters are in backward alphabetic order skipping one preceding letter : V (W) X (Y) Z

15. (b) The series is formed by skipping five following letters and first the letters are given in capital letters then same is repeated as small letters.

A (bcdef) G, M (nopqr) S = AGMS agms

16. (c) One intervening letter is skipped and next letter increase in number by one at a time : a (b) cc (d) eee (f) gggg

17. (c) There are two series one starting from letter b and other from letter n.

Hence : bb nn cc oo dd

18. (c) Letters are in alphabetic order starting from letter m. First one letter in small type and next letter in capital letter, which is repeated.

19. (e) Two intervening letters are skipped, i.e. m (no) p (qr) s (tu) v

20. (c) Two letters are omitted and every alternate letter is given in capitals, i.e. a (bc) D (ef) g (hi) J (kl) M (no) P (qr) s (tu) V.

21. (b) 22. (d) 23. (a) 24. (d) 25. (d)

Questions 21 to 25 are to be answered by counting frequencies of capital and small letters: for example, in Questions 21 to 22, Column contains letters M, Y, A and S, and Column II contains letters g, m, s, and u. This leaves letter G in Column I and letter a in Column II. Obviously G is coded as a.

26. (e) 27. (d) 28. (b) 29. (c)

30. (b) 31. (b) 32. (d)

33. (e) Number of letters in the word are added up and multiplied by two.

34. (e) Add number of letters in the word and multiply by two and then subtract 2.

35. (b) Number of letters in a word are multiplied by two.

36. (e) One letter from beginning and one letter from end is taken in each set of letters in the series.

37. (e) First term has four letters from beginning of the alphabet and four from end. In third term again there are four letters from beginning obviously the fourth term should have letters from end. Hence after EFGH there should be STUV.

38. (c) Two letters are consecutively skipped and first letter of each term keeps alphabetic order. B (CD) E, C (DE) F, D (EF) G.

39. (a) Each term has one preceding and one final vowel with two consonants in between.

40. (b) Letters in each terms are in alphabetic sequence with vowels written inbetween two consonants, e.g. B (A) C

41. (e) The word is TROPICAL

42. (d) SHAHJAHAN - Mughal emperor

43. (e) GALILEO

44. (d) SULPHUR

45. (c) PASCAL - Computer programming language

46. (d) COBAL

48. (c) NEWTON

49. (c)

50. (d)

51. (b)

47. (e) MALTHUSE

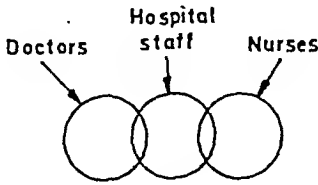
52. (c)

54. (d)

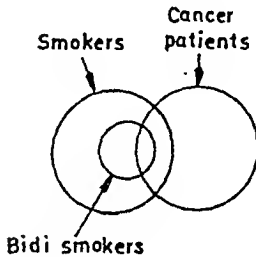
53. (e) There are four O's and four Q's
55 to 64 are self-explanatory by following diagrams:

55. (e)

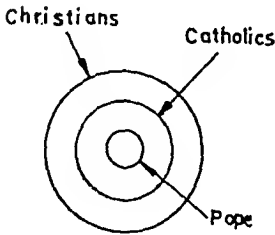
56. (f)



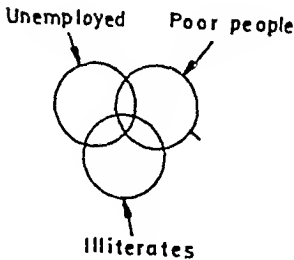
57. (b)



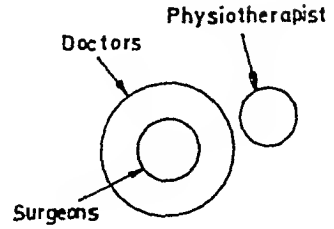
59. (c)



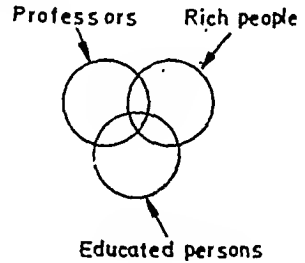
61. (d)



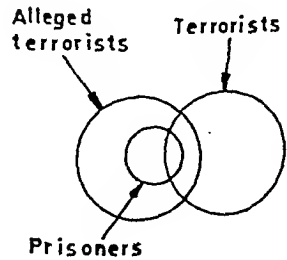
58. (b)



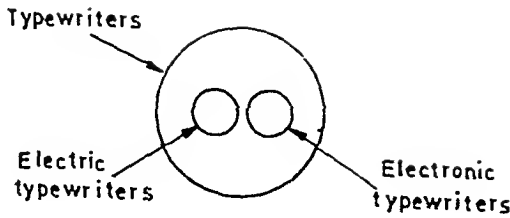
60. (d)



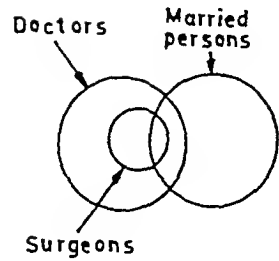
62. (b)



63. (a)



64. (b)



55. (b)

66. (d)

67. (e)

68. (b)

69. (d)

70. (c)

Answers And Explanations

1. (d) Small circle and plus sign inside the large circle are turning in anticlockwise direction alternately. Hence in (d) plus sign should be in place of small circle and vice versa.

2. (c) Movement direction of the main figure (sphere) is clockwise in all figures, in (b) it is anticlockwise.

3. (d) The arrow is changing direction alternately. In (d) it should be pointing inside.

4. (d) Number of small circles increase by one each time it goes inside the main figure. Hence figure (d) should have four small circles inside.

5. (e) Number of angles is increasing one by one in each figure. Figure (e) should have seven angles instead of six.

6. (b) In each the base of the intersecting triangle is inside the main (large) circle. However in (b) the base of triangle is outside.

7. (e) The direction of movement of the spherical figure is clockwise in all figures, except in (e) where it is anticlockwise.

8. (e) The number of lines inside the angular figure is increasing @ 1,2,4 and as such in (e) it should become 8 whereas in (e) there are only 7.

9. (e) Number of lines in the figure increases by one each time.

10. (d) Outer lines (angular figure) rotating clockwise each time taking a turn within the column. The small circle is rotating anticlockwise and when the small square inside is emptied, a plus sign appears there. Figure (d) observes this pattern.

11. (d) The arrow is moving clockwise covering a quarter of the circle each time. Small circles are reducing by one and sign of plus increases by one each time.

12. (d) Once a small line is added and once a sign of plus is added alternately.

13. (c) Number of small inner lines increase by one each time. Once plus is added and once a small circle is added alternately.

14. (d) Number of lines intersecting the spherical figure is reducing by one each time.

15. (d) Black dot disappears one by one from left to right side and small lines increase one by one.

16. (d) Dot rotates anticlockwise and two small lines rotate clockwise from one quarter to the other.

17. (c) The double lines intersecting four corners of the rectangular figure are reducing, one set of two lines at a time, anticlockwise or from left towards right.

18. (e) The arrow intersects sides of the rectangular figure in clockwise direction and alternately points inside and outside.

19. (d) The arrows turns from horizontal position to vertical position alternately and while turning the point of one arrow reverses at a time. The arrows take turn in clockwise direction along with black dot and tiny circle.

20. (d) Horizontal and vertical lines reduce one by one alternately. Once horizontal line is reduced and once vertical line is reduced.

TEST PAPER FOUR

DIRECTIONS: Reverse the order of the English Alphabet. Each letter of reversed order stands for the letter whose position it occupies. In column I there are some words which are written using reversed alphabet in column II but they are not in the same sequence. Both columns contain four-lettered words. Match words of column I with their corresponding words in reversed alphabet given in column II:

Column I

1. B A C K
2. D O E S
3. B A T S
4. L O C K
5. B O L D

Column II

- (a) W L V H
- (b) Y Z X P
- (c) Y L O W
- (d) Y Z G H
- (e) O L X P

DIRECTIONS: Housing Board built 100 flats. A painter is engaged to serially number each flat individually from one to 100.

6. How many times will he be required to write ZERO?
 - (a) 10
 - (b) 8
 - (c) 9
 - (d) 11
 - (e) 7
7. How many times will he be required to write two-digit similar number pairs?
 - (a) 5
 - (b) 2
 - (c) 8
 - (d) 7
 - (e) 9
8. How many times will he be required to write digit FIVE?
 - (a) 21
 - (b) 16
 - (c) 15
 - (d) 20
 - (e) 11
9. How many times will he be required to write ONE?
 - (a) 5
 - (b) 6
 - (c) 8
 - (d) 18
 - (e) 21
10. How many times will he be required to write SEVEN?
 - (a) 21
 - (b) 12
 - (c) 20
 - (d) 16
 - (e) 11

DIRECTIONS: In the following letter sets marked a-e, try to understand the rule involved to form them. The terms in Questions 11 to 16 belong to one of these five letter sets. Match the question terms with terms in series:

- (a) A E, M Q, C G, K O
- (b) A C F J O
- (c) A H N S W
- (d) A D, E H, I L, M P
- (e) A C F H K M

11. U Y

(a) (b) (c) (d) (e)

12. U

(a) (b) (c) (d) (e)

13. Z

(a) (b) (c) (d) (e)

14. QT

(a) (b) (c) (d) (e)

15. P

(a) (b) (c) (d) (e)

DIRECTIONS: In the following questions there are related pair of words in capital letters. Each capitalised pair of letters is followed by five lettered pairs marked a-e. Choose the pair of words/letters from answer choices which best expresses the relationship similar to that expressed in capitalised pair of letters:

16. SCISSORS : CUT :: ? : ?

(a) Pen : Ink

(b) Bat : Players

(c) Tongs : Hold

(d) Knife : Meat

(e) Pen : Paper

17. FEATHER : SOFT :: ? : ?

(a) Cushion : Cotton

(b) Feather : Wings

(c) Hard : Strong

(d) Stone : Hard

(e) Cotton : Pillow

18. PENCIL : PAPER :: ? : ?

(a) Ink : Pen

(b) Ink : Paper

(c) Chalk : Blackboard

(d) Paint : Cloth

(e) Brush : Colours

19. AUTHOR : BOOK :: ? : ?

(a) Film : Actor

(b) Picture : Photographers

(c) Drama : Actor

(d) Actor : Drama

(e) Magazine : Editor

20. WORM : BIRD :: ? : ?

(a) Dog : Cat

(b) Snake : Reptile

(c) Mouse : Cat

(d) Goat : Cow

(e) Crow : Hen

DIRECTIONS: Questions 21 to 25 are based on a code language in which words given in column I are written in column II. For each letter column I there stands a letter in column II. With the help of letters in column I and their corresponding codes in column II, choose correct code from choices a-e for words given in each question:-

Column I

Column II

BOXED

YLCVW

LATER

OZGVI

HEATER

SVZGVI

TONICS

GLMRXH

FOLDER

ULOWVI

21. XEROX

(a) CUHIQ

(b) CVILC

(c) DVILH

(d) CVIMH

(e) CVJLH

22. THERE

(a) GSVJV

(b) HSVIV

(c) GSVIV

(d) GTVIV

(e) GRVIV

23. FORESEE

(a) ULJVHFF

(b) ULIVHVV

(c) UMIHVHV

(d) ULJWHVV

(e) ULIVJWW

24. THROAT

- (a) HTJ MZH
(c) HTJ NZH
(e) USILZU

- (b) GSILZG
(d) SUILZS

25. FEELER

- (a) GFFMFS
(c) VW WQWS
(e) UVVOVI

- (b) WXXPXJ
(d) EDDKDQ

DIRECTIONS: In Questions 26 to 32, there is some specific relationship between the two terms on the left side of (::) and same type of relationship is obtained between the two terms on the right side of (::). One term is missing which has to be selected from answer choices a-e:-

26. BDFH : :: ACEG : J L N P

- (a) K O M Q
(c) M K Q R
(e) L N Q S

- (b) M K O Q
(d) K M G Q

27. AZ : BY :: CX : ?

- (a) EF
(c) DE
(e) DW

- (b) GH
(d) II

28. GT : HS :: KP : ?

- (a) PQ
(c) LO
(e) GH

- (b) RS
(d) LM

29. ABC : ZYX :: DEF : ?

- (a) EGF
(c) WVU
(e) WUT

- (b) XYZ
(d) WXY

30. ZYX : ABC : WVU : ?

- (a) DEF
(c) HIJ
(e) CDJ

- (b) FGH
(d) DFG

31. 41 : 43 :: ? : ?

- (a) 43 : 40
(c) A : C
(e) R : V

- (b) 50 : 51
(d) 40 : 45

32. PQR : VWX :: ? : ?

- (a) ABC : EFG
(c) LMN : RST
(e) DFG : RJK

- (b) BCD : GHI
(d) RST : VWX

DIRECTIONS: Questions 33 to 36 consist of jumbled letters. Against each question a hint in brackets is provided to help you arrive at correct word easily. Rearrange the jumbled letters to form meaningful words and answer questions as per instructions given in the beginning of each question:-

33. Write medial letter of the rearranged word

TERCKKI (A game)

- (a) E
(c) C

2
3
4

- (e) I
34. Write last letter of the rearranged word.
H A T E W (A crop)
- | | |
|-------|-------|
| (a) H | (b) W |
| (c) E | (d) T |
| (e) A | |
35. Write first letter of the rearranged word.
R S F O W E L (Relate to garden)
- | | |
|-------|-------|
| (a) L | (b) S |
| (c) O | (d) F |
| (e) W | |
36. Write the central letter of the rearranged word.
U L B A T E U I F (An adjective)
- | | |
|-------|-------|
| (a) U | (b) L |
| (c) T | (d) F |
| (e) A | |
37. Write first and last letter of the rearranged word.
E R O S H (An animal)
- | | |
|--------|--------|
| (a) ER | (b) SE |
| (c) HE | (d) ES |
| (e) OS | |
- DIRECTIONS: Questions 37 to 42 contain five letter groups marked a-e. Four of them are alike and one is different from the rest. Choose the odd one :-
38. (a) RSBX (b) PBNZ
(c) XMGD (d) OEIU
(e) TQLC
39. (a) ADBC (b) EHFG
(c) ILJK (d) MPNO
(e) QTUV
40. (a) LNP (b) GIK
(c) BDF (d) RUX
(e) ACE
41. (a) MAIN (b) BOEC
(c) RAUS (d) RBVU
(e) FIUG
42. (a) EPOH (b) ELIF
(c) EFIL (d) DRAH
(e) PMSA

DIRECTIONS: For each of the following questions (Questions 43 to 48) two sets of terms are given, one in column I and the other in column II. Compare the terms of both columns and mark your answers with the following lettered conclusions:-

- (A) Both columns have all terms similar in character.
(B) Both columns have only three terms similar in character
(C) Both columns have only two terms similar in character
(D) Both columns have only one term similar in character
(E) None of the terms match in any way

column I

43. AD, EH, IL, MP

column II

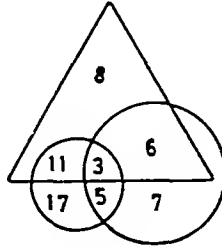
YB, UX, QT, MP

44. IE, OU, AL, EI
 45. AE, FJ, KO, QR
 46. EJ, AB, PQ, FJ
 47. AC, QP, LS, ZA
 48. AZ, BY, CX, DW

- CD, PQ, FG, JK
 BF, GK, LP, RU
 CH, EI, AC, NM
 DT, LS, RA, ZE
 TG, SH, RI, QJ

INSTRUCTIONS: Figure I represents three classes of YOUTHS in a village, where :

- (1) Triangle represents EDUCATED YOUTHS
 (2) Large Circle represents EMPLOYED YOUTHS
 (3) Small circle represents YOUTHS from BACKWARD CLASSES



49. How many educated youths are unemployed?
 (a) 8 (b) 11
 (c) 3 (d) 6
 (e) 19
50. How many youths are uneducated from backward classes?
 (a) 28 (b) 14
 (c) 3 (d) 22
 (e) 6
51. How many educated youths are employed?
 (a) 18 (b) 20
 (c) 15 (d) 9
 (e) 11
52. How many educated youths are from backward classes?
 (a) 28 (b) 14
 (c) 6 (d) 9
 (e) 20
53. How many uneducated youths from backward classes are employed?
 (a) 7 (b) 11
 (c) 14 (d) 5
 (e) 3
54. How many youths from backward classes are employed?
 (a) 7 (b) 11
 (c) 15 (d) 8
 (e) 13
55. How many youths are unemployed?
 (a) 36 (b) 19
 (c) 25 (d) 36
 (e) 16
56. How many youths are employed?
 (a) 12 (b) 16

(c) 10

(d) 21

(e) 14

Statements

1. Seeta, Rajender and Surinder are children of Mr & Mrs Aggarwal.
 2. Renu, Raja and Sunil are children of Mr & Mrs Malhotra.
 3. Sunil and Seeta are married and Ashok and Sanjay are their children.
 4. Geeta and Rakesh are children of Mr & Mrs Gupta.
 5. Geeta is married to Surinder and has three children named Rita, Sonu and Raju.
- Based on the above information, answer following questions:-

57. How is Rajender related to Raju?

(a) Brother

(b) Uncle

(c) Brother-in-law

(d) Cousin

(e) Maternal uncle

58. How Rajender is related to Ashok?

(a) Brother-in-law

(b) Father-in-law

(c) Cousin

(d) Uncle

(e) Maternal Uncle

59. How is Rakesh related to Surinder?

(a) Brother

(b) Cousin

(c) Uncle

(d) Maternal uncle

(e) Brother-in-law

60. What is Surname of Sanjay?

(a) Malhotra

(b) Gupta

(c) Aggarwal

(d) Surinder

(e) None of these

61. How is Rakesh related to Rita?

(a) Brother

(b) Brother-in-law

(c) Uncle

(d) Maternal uncle

(e) Cousin

62. Renu is Sanjay's ____ ?

(a) Sister

(b) Sister-in-law

(c) Cousin

(d) Niece

(e) Aunt

63. Raju's Surname is ____ ?

(a) Gupta

(b) Malhotra

(c) Aggarwal

(d) Surinder

(e) None of these

64. Sunil and Rakesh are related as ____ ?

(a) Brothers

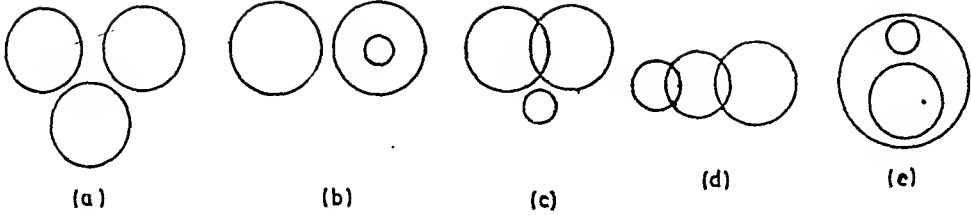
(b) Cousins

(c) Uncle & Cousin

(d) Brother-in-law

(e) None of these

DIRECTIONS: You are required to choose from the five diagrams marked a-e the one that best illustrates the relationship among three given classes in questions 65 to 70. The relative sizes of circles do not indicate relative sizes of classes.



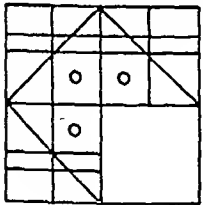
- 65 Surgeons, Engineers, Teachers
66. Police Officers, Females, Jeeps
67. Vehicles, Petrol vehicles, Diesel vehicles
68. Insects, Flies, Dogs
69. Relatives, Nephews, Niece
70. Brothers, Painters, Aunts

NON-VERBAL TESTS

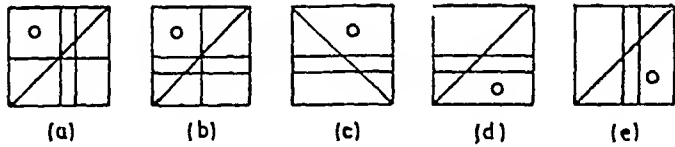
DIRECTIONS: The **PROBLEM FIGURE** has a portion incomplete. Select the figure from **ANSWER FIGURES** marked a-e which fits into the blank space in the incomplete portion of **PROBLEM FIGURE** so that the original pattern is complete:

1.

PROBLEM FIGURE

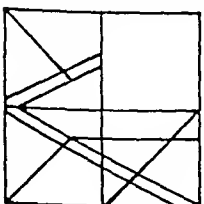


ANSWER FIGURES

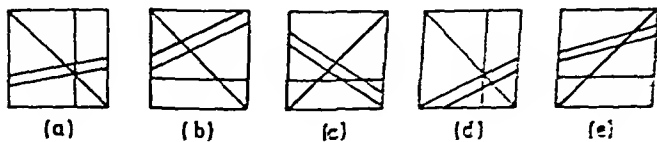


2.

PROBLEM FIGURE

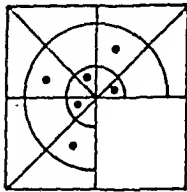


ANSWER FIGURES

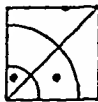


3.

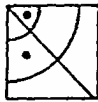
PROBLEM FIGURE



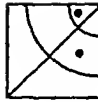
ANSWER FIGURES



(a)



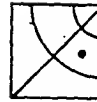
(b)



(c)



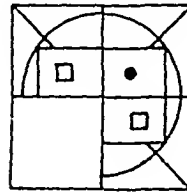
(d)



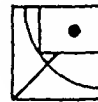
(e)

4.

PROBLEM FIGURE



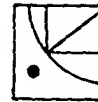
ANSWER FIGURES



(a)



(b)



(c)



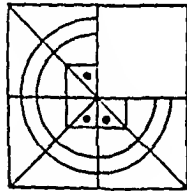
(d)



(e)

5.

PROBLEM FIGURE



ANSWER FIGURES



(a)



(b)



(c)



(d)

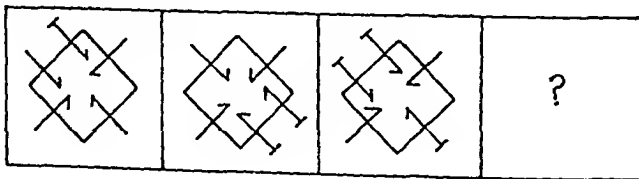


(e)

DIRECTIONS: Name the serial number of the figure in the ANSWER FIGURE column marked a-e which will complete the series, i.e., fit in the last column (No. 4) of the PROBLEM FIGURES:

6.

PROBLEM FIGURE



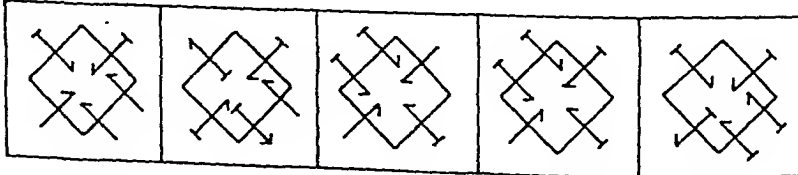
1

2

3

4

ANSWER FIGURES



(a)

(b)

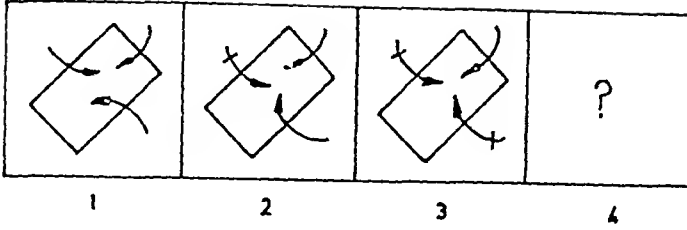
(c)

(d)

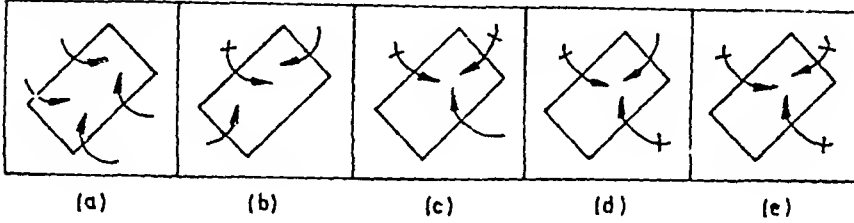
(e)

7.

PROBLEM FIGURE

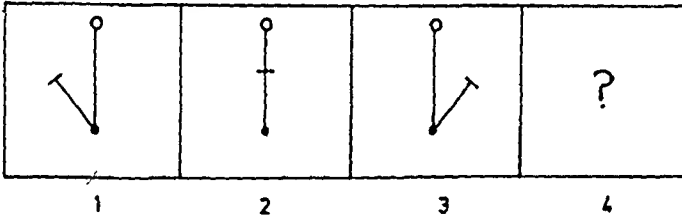


ANSWER FIGURES

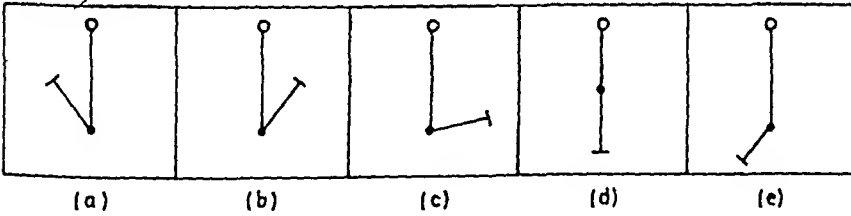


8.

PROBLEM FIGURES

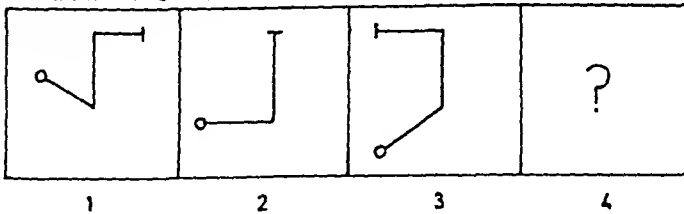


ANSWER FIGURES

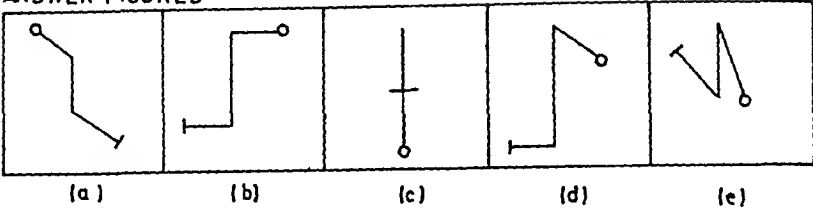


9.

PROBLEM FIGURE

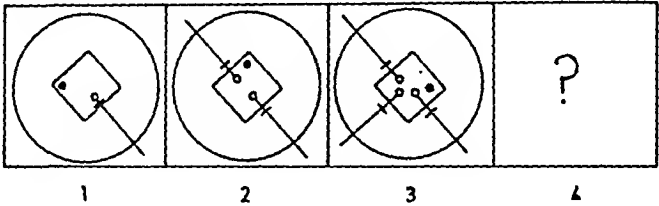


ANSWER FIGURES

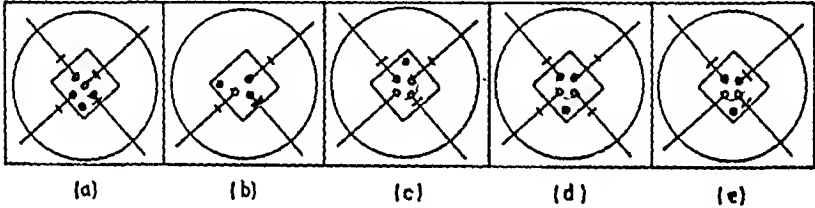


10.

PROBLEM FIGURE

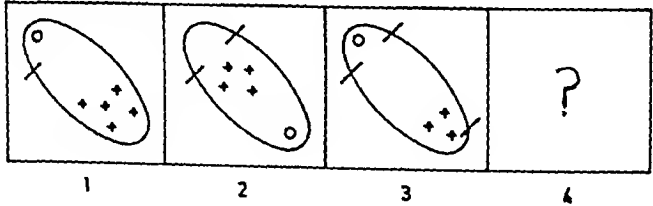


ANSWER FIGURES

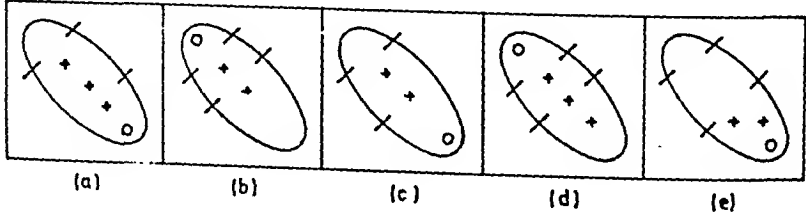


11.

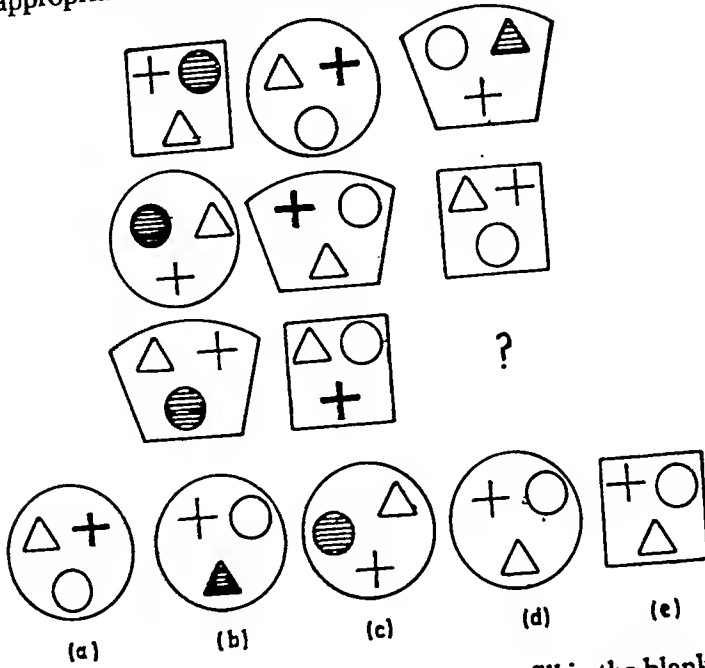
PROBLEM FIGURE



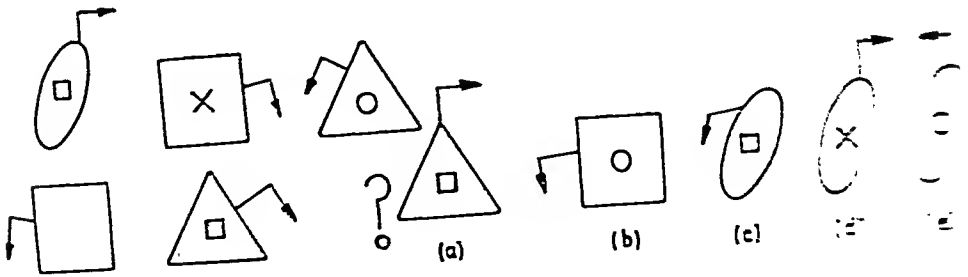
ANSWER FIGURES



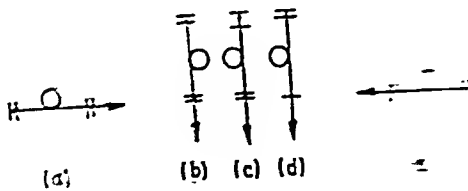
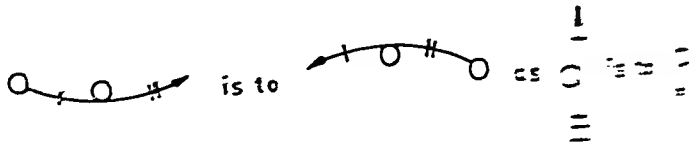
12. Select the appropriate lettered figure from choices a-e to fill in the blank row?



13. Select an appropriate figures from amongst a-e to fill in the blank.



14.



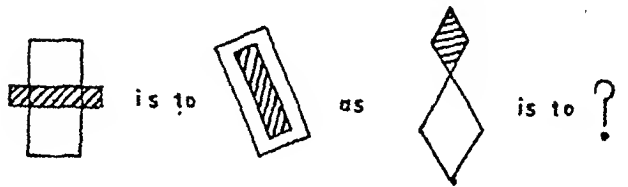
15.



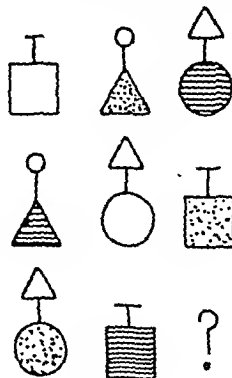
16.

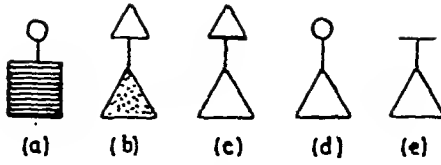


17.

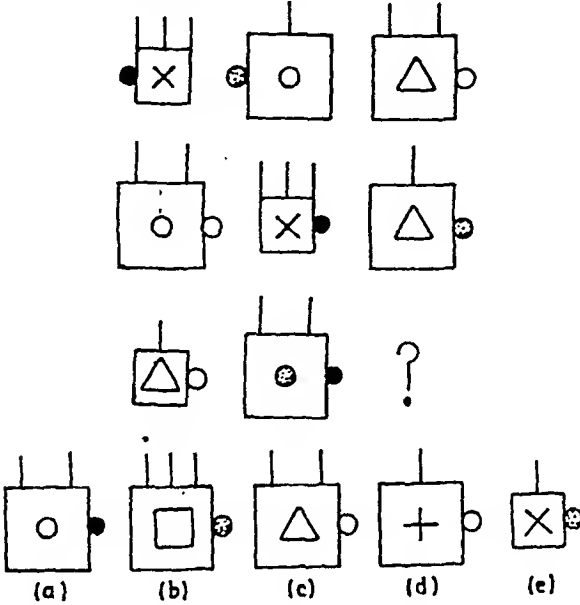


18. Select an appropriate figure from choices a-e to fill in the blank.

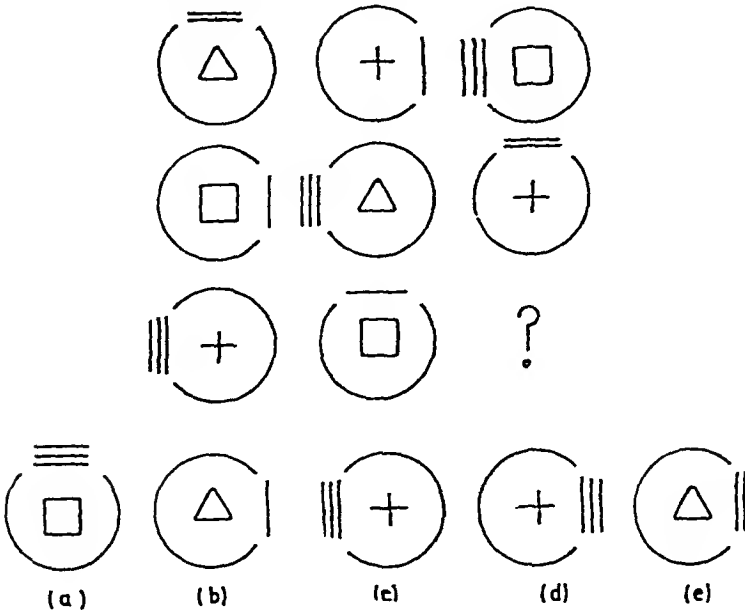




19. Select an appropriate figure from choices a-e to fill in the blank.



20. Select appropriate figure from figures a-e to fill in the blank.



Answers And Explanations

1. (b) 2. (a) 3. (d) 4. (e)
 5. (c) 6. (d) 7. (e) 8. (d)
 9. (e) 10. (c)
11. (a) Letter sets are made by skipping three intervening letters
 A(bcd)E, M(nop)Q, C(def) G, K(lmn)O, U(vwx)Y
12. (b) Letters skipped increase by one at a time, i.e.
 A(b)C (de)F (ghi)J (klmn)O (pqrst)U
 1 2 3 4 5
13. (c) Letters skipped reduce in number one by one, i.e.
 A(bcdefg)H (ijklm)N (opqr)S (tuv)W (zy)Z
 6 5 4 3 2
14. (d) Two letters at a time are skipped in each letter set,
 A (bc) D, E (fg)H, I(jk)L, M (no)P, Q (rs) T
15. (c) First one and then two letters are skipped alternately, i.e.
 A (b) C (de) F (g) H (ij) K (l) M (no) P
16. (c) 17. (d) 18. (c) 19. (d)
 20. (c) 21. (b) 22. (c) 23. (b)
 24. (b) 25. (c)
26. (d) All terms are formed by skipping one following letter in alphabetic sequence, i.e. B(c)D(e)F(g)H
27. (e) In each term one letter from the beginning and one from end of alphabet are taken, i.e. A with Z, B with Y and so on.
28. (c) Same as above.
29. (c) Three letters from beginning of the alphabet are taken and three letters from end are taken, and letters from end are reversed in order, i.e.

ABC DEF UVW XYZ

30. (a) Same as question 29. Only order of the terms is reversed.
31. (c) As in numbers after 41 by skipping 42 comes 43, similarly in English Alphabet after A by skipping B comes C.
32. (c) Between first and second terms three letters are skipped i.e. PQR (STU) VWX similarly in (c) three letters are skipped, LMN (OPQ) RST
33. (c) The word is 'CRICKET'
34. (d) WHEAT 35. (d) FLOWER
 36. (c) BEAUTIFUL 37. (c) HORSE
38. (d) All other terms consists of consonants whereas (d) contains only vowels.
39. (e) In other terms, letters are taken from a block of four letters as follows:

A B C D

E F G H

I J K L

M N O P

40. (d) In other terms one intervening letter is skipped e.g. L (M) N (O) P whereas in (d) the skipping pattern is R (ST) U (VW) X
41. (d) In all terms there are two vowels in between two consonants.

42. (e) All letters when reversed form meaningful words except (d), i.e. HOPE, FILE, LIFE, HARD.

43. (a) In all terms two intervening letters are skipped.

A (bc) D, E (fg) H, I (jk) L, M (no) P, and Y (za) B, U (vw) X, Q (rs) T, M (no) P.

44. (e) Column I has all vowel pairs whereas Column II has only consonant pairs.

45. (b) In three terms in both columns intervening three letters are skipped.

A (bcd) E, F (ghi) j, K (lmn) O,

B (cde) F, G (hij) K, L (mno) P.

46. (c) There are two similar type of terms in both columns, viz: E (fghi) J, F (ghi) J, in column 1 and C (defg) H and E (fgh) I.

47. (d) Each column has one term matching in character, i.e., 'LS'.

48. (a) A B C D and T S R Q

Z Y X W

G H I J

49. (e) $11 + 8$

51. (d) $6 + 3$

53. (d)

55. (a) $8 + 11 + 17$

57. (b) Uncle

59. (e) Brother-in-law

61. (d) Maternal Uncle

63. (c) Aggarwals

50. (d) $17 + 5$

52. (b) $11 + 3$

54. (d) $5 + 3$

56. (d) $7 + 6 + 3 + 5$

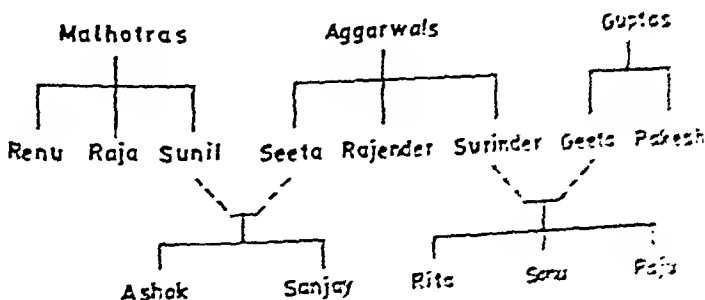
58. (e) Maternal Uncle

60. (a) Malhotra

62. (e) Aunt

64. (d) Brother-in-law

Note: For Questions 57 - 64, the situation can be diagrammed as follows and answers will be clear :-



65. (d)

66. (c)

67. (e)

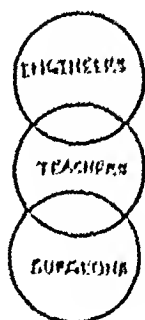
68. (b)

69. (e)

70. (d)

Explanations : Questions 65 To 70

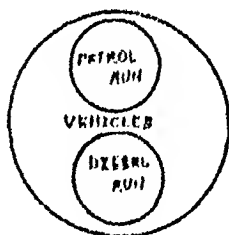
65. (d) Some surgeons and some engineers may be colleges.



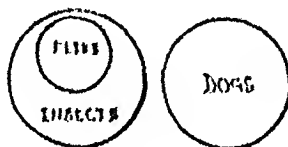
66.(c) Some females may be police officers, Jeep is a separate class.



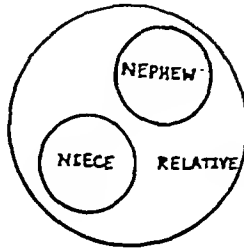
67.(c) Both petrol run and diesel run vehicles come under the class vehicles.



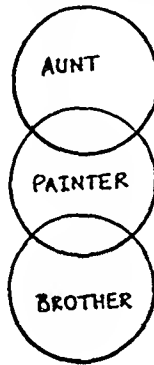
68. (h) Flies are covered under the class insects. Dog is an animal forming a separate class.



69. (e) Both nephew and niece come under the class relatives



70. (d) Some brothers and some aunts can be painter.



Answers And Explanations

1.(b) 2.(b) 3.(d)

4.(a) 5.(a)

6.(e) The intersecting arrows get a base one by one. In (e) there are four arrows all having a base.

7.(e) The intersecting arrows get a small line intersected one by one. To maintain the sequence, the next figure should have all the three arrows with an intersecting line. Figure (e) fulfils this.

8.(c) There are two hands of a watch. The hand with a circle is fixed whereas the other hand is moving in clockwise direction covering a quarter at a time. Figure (c) is the correct position to continue the sequence. Hence (c) is the answer.

9.(c) There are two hands of a watch, one with a circle and one with a base line. The hand with the circle is rotating anticlockwise covering a quarter at a time, whereas the hand with base line is rotating anticlockwise covering two quarters (90 degrees) at a time.

10.(d) The black dot is moving clockwise. Intersected pins increase by one each time. The intersection of pin should be outside the square.

11.(e) The plus sign (+) reduce one by one and in its place a small line intersects the spherical figure. The small circle inside changes positions alternatively.

12.(b) There are three main shapes, inside each there are three small figures, one of them shaded.

13.(d)

14.(d) The main figure is reversed.

15.(e) Single line figure becomes double lined figure and horizontal eliminated.

16.(b) The mirror image of first figure is added up.

17.(e) Superimpose figures and rotate.

18.(d) There are three main figures, three types of shading and three different figures on the top, each occurring only once.

19.(d) There are three sizes of squares, three number of lines, three different figures inside and three types of shading, each occurring only once.

20.(e) The opening can be up, left or right, inside can be a small triangle, square or circle. The opening covered by one, two or three lines. Each occurring only once.

TEST PAPER FIVE

VERBAL

DIRECTIONS: Here some signs used in Mathematics are replaced by different symbols as follows:

- > stands for division
- V stands for multiplication
- < stands for addition
- ^ stands for subtraction
- + stands for equal to
- stands for greater than
- X stands for less than

In the questions below one alternative is correct. Find that out:

1. (a) $5 \vee 4 < 2 + 10 \vee 2 < 2$
(b) $8 \vee 4 - 2 + 5 > 7 \wedge 6$
(c) $8 \vee 6 - 3 + 4 > 7 \wedge 6$
(d) $9 \vee 3 - 1 + 6 > 8 \wedge 9$
(e) $4 \vee 3 + 3 + 8 \vee 5 \wedge 6$
2. (a) $3 \wedge 5 \vee 6 + 12 \vee 6 \wedge 7$
(b) $3 \wedge 4 > 5 + 8 \wedge 6 \wedge 4$
(c) $8 > 6 \vee 6 + 8 \vee 4 \wedge 4$
(d) $5 \wedge 6 > 9 + 6 \wedge 9 \vee 8$
(e) $8 < 2 \wedge 6 + 5 \vee 2 \wedge 6$
3. (a) $8 > 6 \wedge 7 + 5 \vee 1 \wedge 7$
(b) $9 \wedge 8 < 7 + 3 < 7 \wedge 8$
(c) $9 \wedge 5 > 1 + 5 \vee 6 \wedge 8$
(d) $9 \wedge 3 < 9 + 3 < 6 < 5$
(e) 564459
4. (a) $5 \wedge 2 \vee 7 + 6 \wedge 3 \vee 7$
(b) $7 \wedge 4 \wedge 8 + 9 \wedge 5 \vee 3$
(c) $5 \wedge 2 > 7 + 6 > 3 \wedge 7$
(d) $7 \wedge 5 \wedge 4 \div 6 \wedge 7 \wedge 3$
(e) $4 \wedge 3 > 6 + 3 > 7 \wedge 8$
5. (a) $12 \wedge 3 < 5 < 4 + 12$
(b) $11 \wedge 12 < 5 < 4 - 11$
(c) $10 \wedge 3 < 5 < 4 + 16$
(d) $4 \wedge 6 < 4 < 4 - 11$
(e) $12 \wedge 3 \vee 5 < 4 + 12$

DIRECTIONS: In Questions 6 to 10, there is a blank space in the first alternative. Five alternatives are given under the questions. The one which satisfies the same relationship between the two terms on the other side of sign :: given is the correct alternative to fill in the blank from answer.

6. UNDATED : ATEDUND :: CORRECT :

- (a) PRECTOC
- (c) CTERORC
- (e) RECTCOR

7. CALCUTTA : ATTUCLAC :: KANPURA :

- (a) PURKAN
- (c) PURKNA
- (e) None of these

8. THEREFORE : TEEOERFER :: BECAUSE :

- (a) RETPOCILHE
- (c) HLCPERTOIE
- (e) None of these

9. BUCKET : ACTVBDJLE :: BASKET :

- (a) ACMNMOTURT
- (c) SUNOB

(e) ACMNMOTVRT

10. COMICS : DPNJDT :: POLICY :

(a) YCILOP

(b) LICYPO

(c) QPMJDZ

(d) QRMJDZ

(e) ONKHBX

Complete the series:

11. A D G J

N Q R U

P S I ?

(a) J

(b) M

(c) N

(d) L

(e) O

12. B F G K

L P R V

? U V Z

(a) P

(b) T

(c) W

(d) S

(e) Q

13. A C F J O U ?

(a) T

(b) W

(c) Y

(d) Z

(e) B

14. A P B Q C R D S ??

(a) TU

(b) RS

(c) FT

(d) ET

(e) EU

15. B L D M F N H O ??

(a) ST

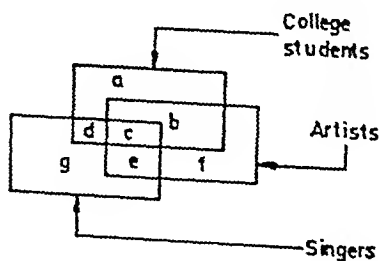
(b) TV

(c) UX

(d) VZ

(e) JP

DIRECTIONS: Questions 16 to 20 are based on the following diagram in which three squares are interlocked. Each square represents a certain section of population. Different regions of the diagrams are marked a to g. Read the statements of the questions that follow the diagram and choose the correct answer from answer choices marked a to e:



16. College students who are Artists but not Singers represented by :

(a) a

(b) b

(c) f

(e) e

(d) d

17. Artists who are neither College students nor Singers are represented by:

(a) b

(b) e

(c) c

✓(d) g

(e) f

18. College students who are Singers but not Artists are represented by :

(a) a

(b) b

(c) c

(d) g

(e) d ✓

19. College students who are Artists as well as Singers are represented by:

✓(a) c

(b) f

(c) g

(d) b

(e) a

20. Singers who are Artists as well but not studying in college are ~~represented by:~~

✓(a) c

(b) c

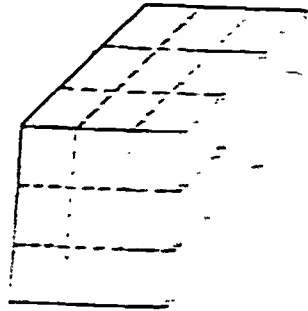
(c) d

(d) f

(e) g

DIRECTIONS: For questions no. 21 to 25.

A wooden cube is painted Red on all the four adjoining sides and Black on two opposite sides, i.e. top and bottom. It is then cut at equi-distance at right angles four times horizontally (top to bottom) and two times vertically (along the sides). The figure here represents the cube and dotted lines represents the cuts made. Study the diagram and answer the following question:



21. How many small cubes will thus be ~~formed~~

(a) 24

(c) 32

(e) 27

22. How many cubes will have one ~~face~~

(a) 4

(c) 2

(e) 5

23. How many cubes will have ~~two~~

(a) 2

(c) 5

(e) 3

24. How many cubes will ~~have~~

(a) 3

(c) 4

(e) 1

25. How many ~~cubes~~

(a) 1

(c) 3

(d) 8

(d) 6

For Questions 26 to 31:

Between 100 and 300 (Both inclusive) :

26. How many figures will have digit 2 (two) in the end?

(a) 12

(b) 22

(c) 15

(d) 18

(e) 20

27. How many figures will have a zero in the middle?

(a) 19

(b) 13

(c) 21

(d) 22

(e) 10

28. How many figures will have digit three (3) both in the end and beginning?

(a) 2

(b) 20

(c) 18

(d) 17

(e) None

29. How many figures will have digit two (2) both in front and in the end?

(a) 12

(b) 11

(c) 20

(d) 9

(e) 10

30. How many figures will end in Two (2)?

(a) 16

(b) 14

(c) 22

(d) 20

(e) 17

31. How many Zeros will be there?

(a) 39

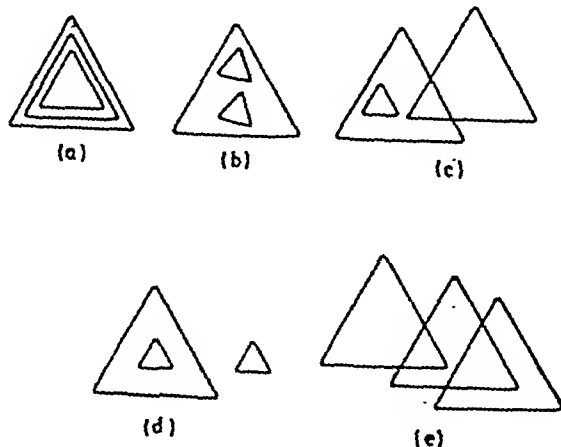
(b) 40

(c) 38

(d) 42

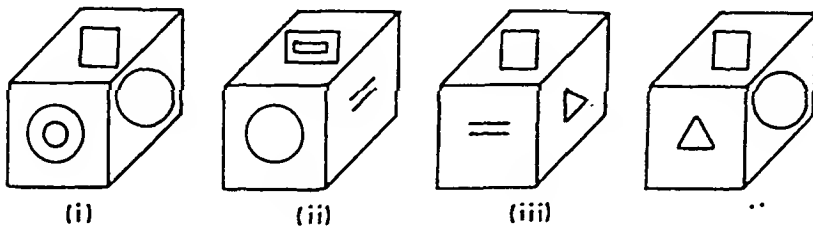
(e) 36

DIRECTIONS: Questions 32 to 40 are based on the following set of diagrams, which consists of five lettered figures marked a-e. Each figure illustrates the relationship among the three given classes of items in each question. The sizes of the figures do not indicate relative sizes of classes. Choose the figure that best illustrates the relationship among various classes of items given in the questions:-

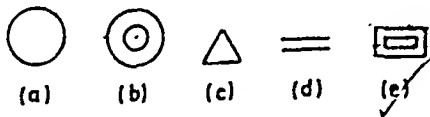


32. Animals, Mammals, Goat *a*
 33. Animals, Cows, Leopard *b*
 34. Flying objects, Crows, Birds *d*
 35. Axes, Weapons, Pistol *a*
 36. Birds, Butterfly, Insects
 37. C.R.P.F., B.S.F., Paramilitary Forces
 38. School Teachers, Public School Teachers, Convent School Teachers
 39. District, Tehsil, Village
 40. District Administration, S.S.P., D.C

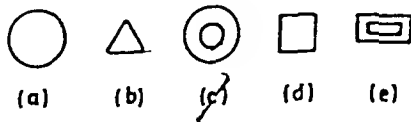
DIRECTIONS: For Questions 41 to 43. In the following diagram there are four views of a single wooden cube having various markings on its all the six faces. Study the views and answer questions that follow:



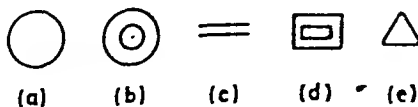
41. Which symbol is at the bottom of view (iv)?



42. Which symbol is opposite the face having double lines (=)?



43. Which symbol is opposite the face having triangle (Δ)?



DIRECTIONS: For questions 43 to 46.
 If the following letters are placed in the order opposite to that in which they appear in the alphabet,

K S T V Q M E L Y P F G

then:

44. Which would be the First letter in the sequence?

- (a) G (b) P
(c) E (d) Y
(e) V

45. Which would be the Third letter from the left?

- (a) T (b) V
(c) S (d) Q
(e) G

46. Which would be the Fourth letter?

- (a) Q (b) G
(c) L (d) S
(e) K

*Answer Key And Explanations (verbal Reasoning Tests)*1. (a) $5 \times 4 + 2 = 10 \times 2 + 2$ or $22 = 22$ 2. (e) $8 + 2 - 6 = 5 \times 2 - 6$ or $4 = 4$ 3. (d) $9 - 3 + 9 = 3 + 6 + 6$ or $15 = 15$ 4. (a) $5 - 2 \times 7 = 6 - 3 \times 7$ or $21 = 21$ 5. (c) $10 - 3 + 5 + 4 = 16$ 6. (e) 1 2 3 4 5 6 7
U N D A T E D1 2 3 4 5 6 7
C O R R E C T

A T E D U N D

4 5 6 7 1 2 3

R E C T C O R

4 5 6 7 1 2 3

7. (b) CALCUTTA reversed becomes ATTUCLAC, similarly KANPUR = RUPNAK.

8. (c) 1 2 3 4 5 6 7 8 9

T H E R E F O R E

1 2 3 4 5 6 7 8 9 10

H E L I C O P T E R

T E E O E R F R H

1 3 5 7 9 8 6 4 2

H L C P E R T O I E

1 3 5 7 9 10 8 6 4 3

9. (b) Letter is coded by one preceding and following letter, i.e. B = AC, C = BD, hence

B O N U S = A C N P M O T V R T

10. (c) Letter is coded by its immediately following letter in alphabetical order, i.e. A = B, B = C, C = D, etc. Hence: P O L I C Y = Q P M J D Z

11. (d) Two intervening letters are skipped, i.e.

A (BC) D

G (HI) J

N (OP) Q and so on.

Letters given in brackets are the one skipped.

12. (e) Three intervening letters are skipped, i.e.

B (CDE) F, G (HIJ) K, L (MNO) P and so on.

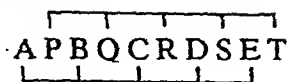
13. (e) Letters skipped increase in number as follows:

A (B) C (DE) F (GHI) J (KLMN) O (PQRST) U (VWXYZA) B

1 2 3 4 5 6

Note: In circular (continuous) series, after A Z follows and subsequent letters are repeated.

14. (d) There are two series, i.e.



15. (e) There are two series, i.e.



In one series, one following (intervening) letter is skipped and the second series is without any skipping (straight) i.e.

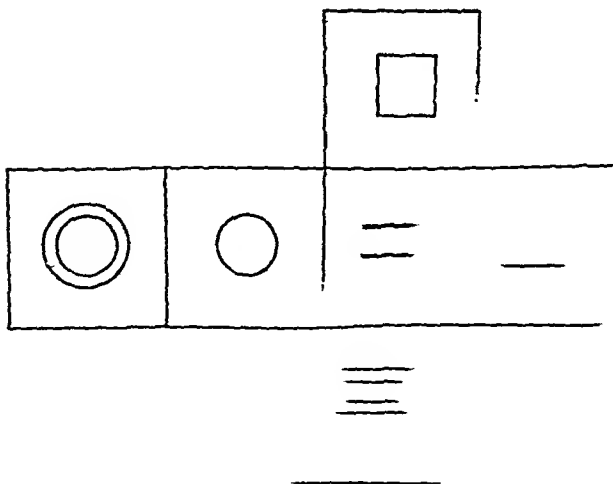
B (C) D (E) F (G) H (I) J - First series

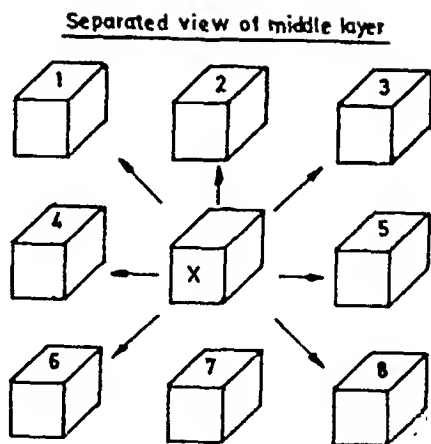
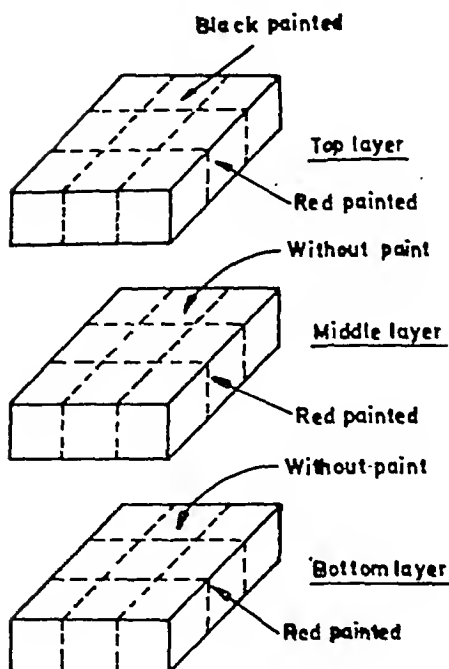
L M N O P - Second series

- | | | | |
|----------|-----------|-----------|-----------|
| 16. (b) | 17. (e) | 18. (e) | 19. (a) |
| 20. (a) | *21. (e) | *22. (c) | *23. (d) |
| *24. (c) | *25. (d) | 26. (e) | 27. (c) |
| 28. (e) | 29. (e) | 30. (d) | 31. (d) |
| 32. (a) | 33. (b) | 34. (c) | 35. (b) |
| 36. (d) | 37. (b) | 38. (b) | 39. (a) |
| 40. (b) | **41. (e) | **42. (c) | **43. (a) |
| 44. (d) | 45. (e) | | 46. (d) |

* and ** For detailed explanations for answers to questions 21-25 and 41-43 see following illustrations:

For questions 41 to 43 note the following unfolded view of the cube ~~from~~ ~~the~~ the answers will be clear.



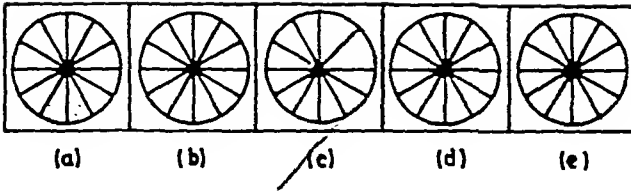


The central cube marked (X) is the only cube which will have all faces plain. As each layer is giving nine small cubes, there will be total 27 cubes.

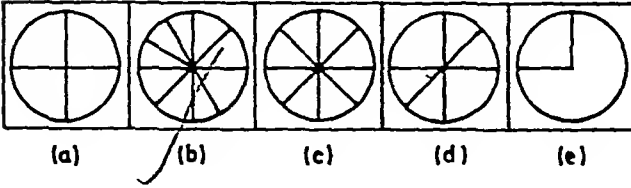
NON-VERBAL

DIRECTIONS: Four of the five figures marked a c are alike in some way or the other and one is different from the rest. You have to choose the figure which is different (odd):

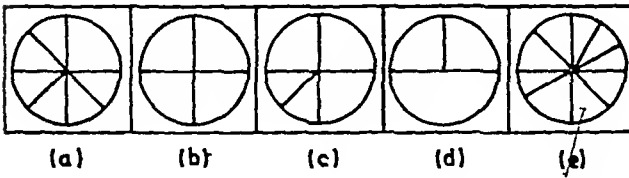
1.



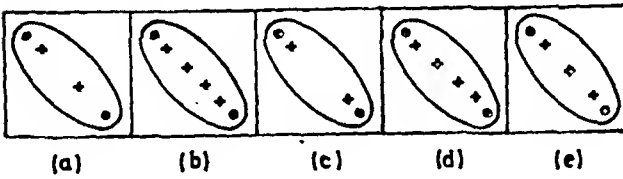
2.



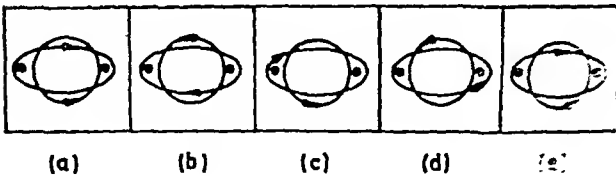
3.



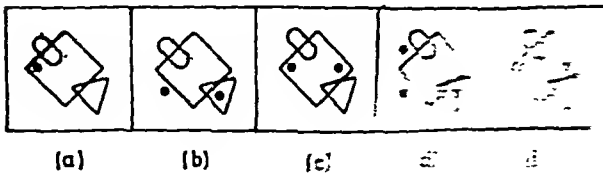
4.



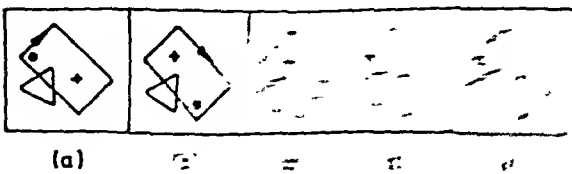
5.



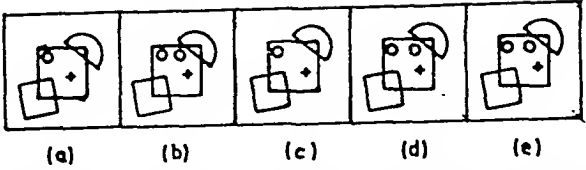
6.



7.



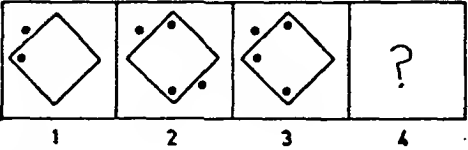
8.



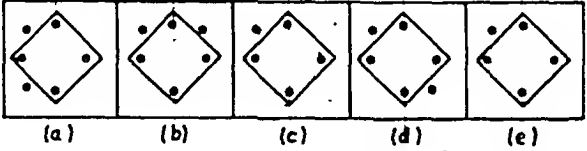
DIRECTIONS: Name the serial number of the figure in the ANSWER FIGURE column marked a-e which will complete the series, i.e. fit in the last column (No. 4) of the PROBLEM FIGURES:

9.

PROBLEM FIGURES

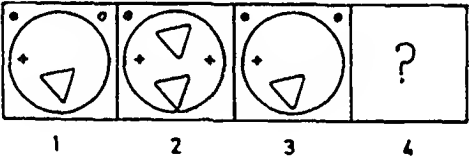


ANSWER FIGURES

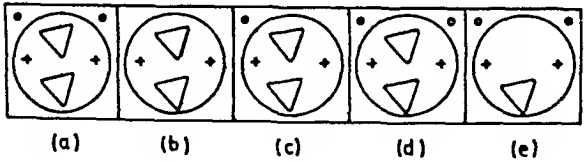


10.

PROBLEM FIGURES

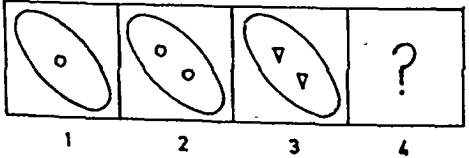


ANSWER FIGURES

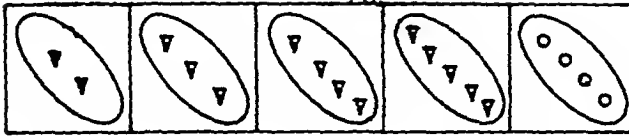


11.

PROBLEM FIGURES

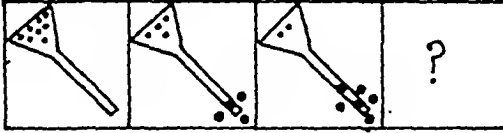


ANSWER FIGURES



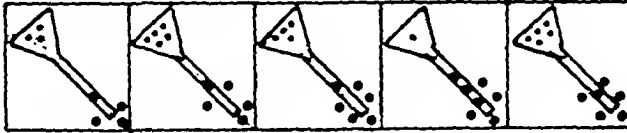
(a) (b) (c) (d) (e)

PROBLEM FIGURE



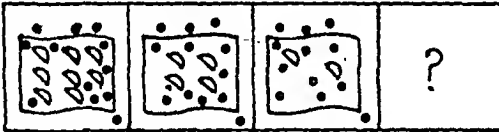
1 2 3 4

ANSWER FIGURES



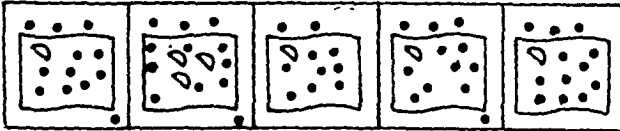
(a) (b) (c) (d) (e)

PROBLEM FIGURE



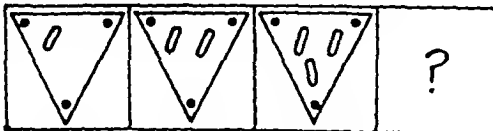
1 2 3 4

ANSWER FIGURES



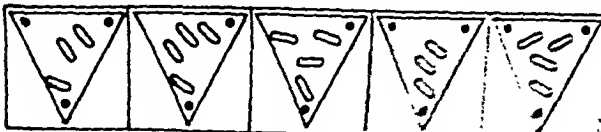
(a) (b) (c) (d) (e)

PROBLEM FIGURES



1 2 3 4

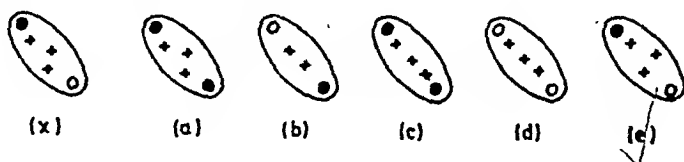
ANSWER FIGURES



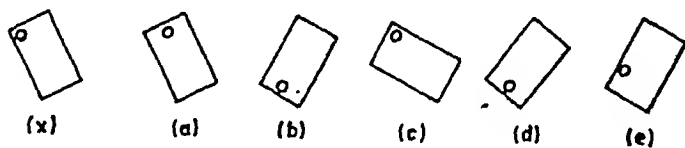
(a) (b) (c) (d) (e)

DIRECTIONS: Identify a figure from choices marked a to e given on the right hand side which is similar to the figure (x) given on the left hand side:

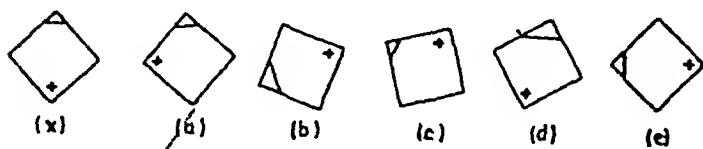
15.



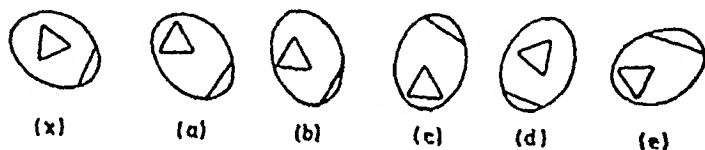
16.



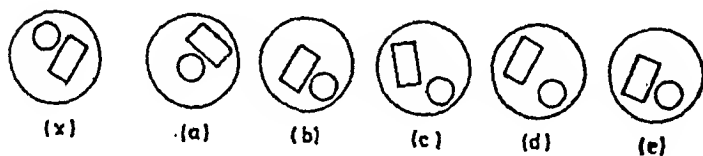
17.



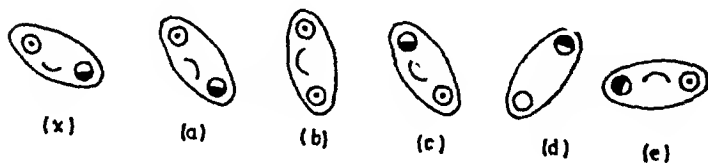
18.



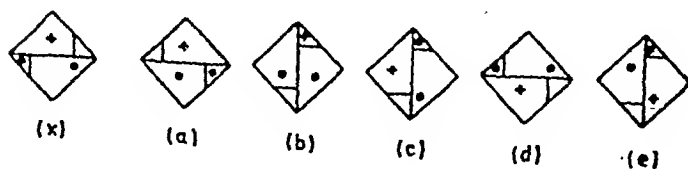
19.



20.



21.



22.



(x)



(a)



(b)



(c)



(d)



(e)

DIRECTIONS: If a square sheet of paper is folded two times from the corner, and cut, are given as shown in the PROBLEM FIGURE, then what is expected when it is opened? Select appropriate figure from A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z.

23.

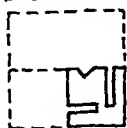
24.

25.

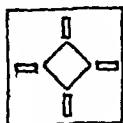
26.

27.

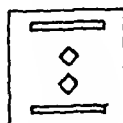
PROBLEM FIGURE



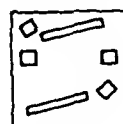
ANSWER FIGURES



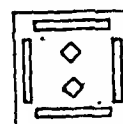
(a)



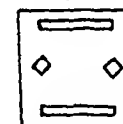
(b)



(c)



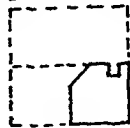
(d)



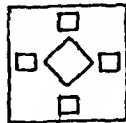
(e)

28.

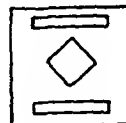
PROBLEM FIGURE



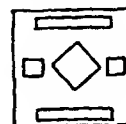
ANSWER FIGURES



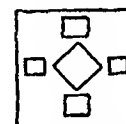
(a)



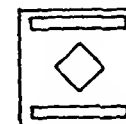
(b)



(c)



(d)

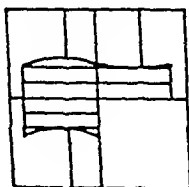


(e)

DIRECTIONS: The **PROBLEM FIGURE** has a portion incomplete. Select the figure from **ANSWER FIGURES** marked a-e which fits into the blank space in the incomplete portion of **PROBLEM FIGURE** so that the original pattern is complete:

29.

PROBLEM FIGURE



ANSWER FIGURES



(a)



(b)



(c)



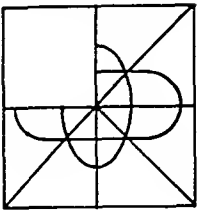
(d)



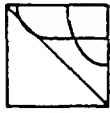
(e)

30.

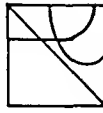
PROBLEM FIGURE



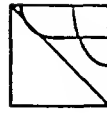
ANSWER FIGURES



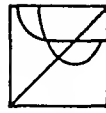
(a)



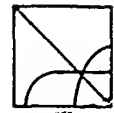
(b)



(c)



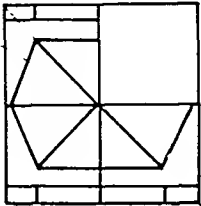
(d)



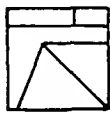
(e)

31.

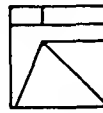
PROBLEM FIGURE



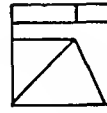
ANSWER FIGURES



(a)



(b)



(c)



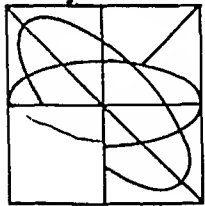
(d)



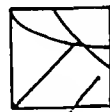
(e)

32.

PROBLEM FIGURE



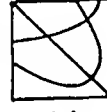
ANSWER FIGURES



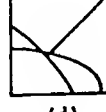
(a)



(b)



(c)



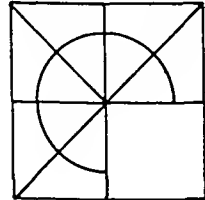
(d)



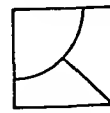
(e)

33.

PROBLEM FIGURE



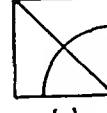
ANSWER FIGURES



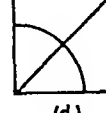
(a)



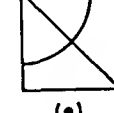
(b)



(c)



(d)



(e)

DIRECTIONS: Figure (x) shows the folded view of a piece of paper. Answer choices a-e show same paper unfolded and lines left by the fold. You are required to select which figure from a-e will look like original figure (x) when unfolded and having lines left by the folds:

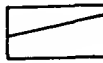
34.



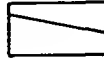
(x)



(a)



(b)



(c)



(d)



(e)

35.



(x)



(a)



(b)



(c)

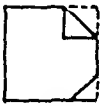


(d)

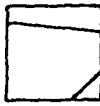


(e)

36.



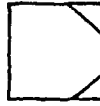
(x)



(a)



(b)



(c)



(d)

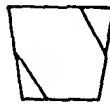


(e)

37.



(x)



(a)



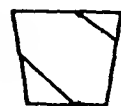
(b)



(c)



(d)



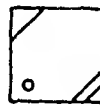
(e)

INSTRUCTIONS: If figure (x) given on the left hand side is seen through a mirror how will it look like or what would be its mirror reflection. Select appropriate figure from answer choices marked a to e:

38.



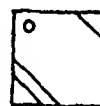
(x)



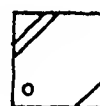
(a)



(b)



(c)



(d)



(e)

39.



(x)



(a)



(b)



(c)



(d)



(e)

40.



(x)



(a)



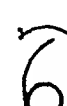
(b)



(c)

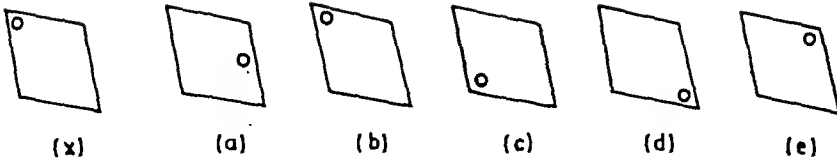


(d)

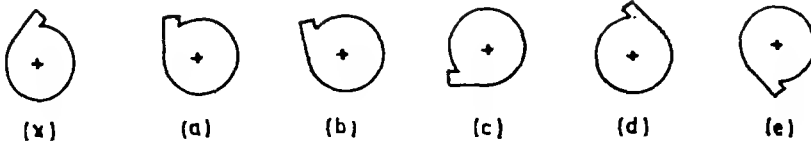


(e)

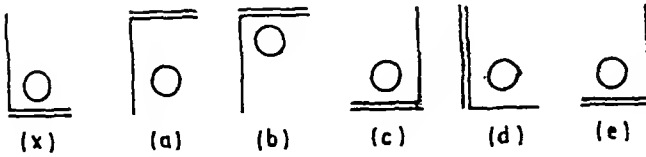
41.



42.



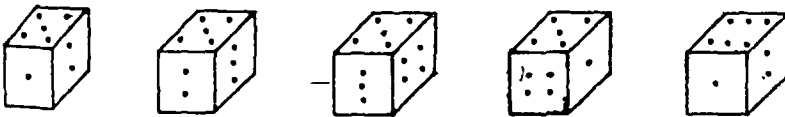
43.



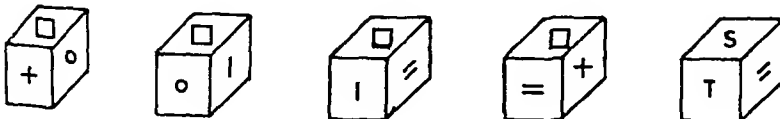
DIRECTIONS: Cubes shown here are having various symbols/markings on their faces. Each question has 5 views of some cubes. You have to determine how many different cubes are involved in each case. Answers have to be marked as follows:

- (a) In case only one cube is involved
- (b) In case two cubes are involved
- (c) In case three cubes are involved
- (d) In case four cubes are involved
- (e) In case five or more cubes are involved

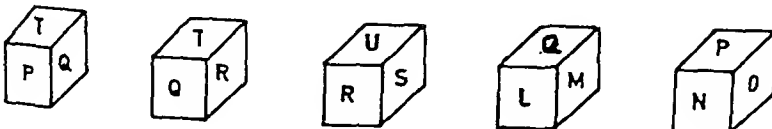
44.



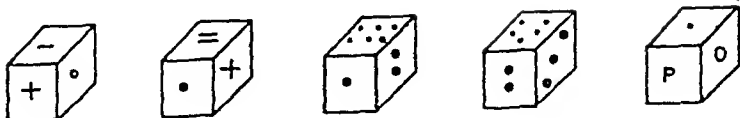
45.



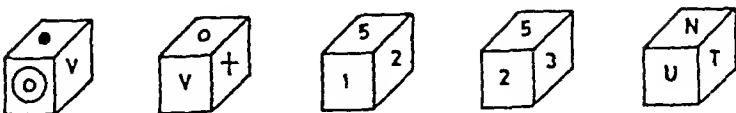
46.



47.



48.

**Answer Key And Explanations (Non-Verbal Reasoning Tests)**

1. (c) All have 12 lines, (c) has eleven, hence odd.
2. (b) In all circle is sub-divided into even number of columns i.e. (a) has 4, (b) has 9 (which is odd), (c) has 8, (d) has 6 and (e) has 2. Hence (b) is odd.
3. (b) In all others circle is sub-divided into odd number of columns whereas (b) has even number of columns.
4. (e) The plus sign (+) is in the order of 2 : 4 : 2 : 4
Hence after (d) which has four plus signs there should be two plus signs in (e) to maintain the sequence.
5. (d) All spherical figures are shown moving in clockwise direction whereas in (d) it is shown moving anti-clockwise. Hence it is odd.
6. (e) Inner and outer dots increase by one each time. In (e) there should be three dots inside.
7. (d) The black dot is moving from one side to the other in anticlockwise direction. In (d) it should be in upper corner to maintain the sequence.
8. (e) The inner small circles are in the order of 1 : 2 : 1 : 2. Hence in (e) there should be only one small circle.
9. (d) The outer dots are in the order of 1 : 2 : 1 : 2 and they are in opposite direction to each other. Note Problem Figure (2) and Answer Figure (d).
10. (c) The outer dots are in the order of 2 : 1 : 2 : 1
11. (c) In Problem Figure (1) small circle is one which doubles in Problem Figure (2). In Problem Figure (3) there are two triangles which obviously should double in Figure (4) to maintain continuity of the sequence.
12. (d) Number of dots in the funnel are reducing in the following order 8 : 4 : 2 : 1. The reduced dots pass through the funnel which are shown in relevant correct figures.
13. (d) Semi-circles are decreasing in the order of 8 : 4 : 2 : 1 Fig. (a), (c) and (e) have no doubt one semi-circle but number of inner and outer black dots and small circles are varying making them incorrect. To keep the sequence figure (d) should have three outer black dots, five inner small circles and three black dots.
14. (e) Items inside the triangle increase one by one at rate of 1 : 2 : 3 : 4.
15. (e) It is reverse of figure (x).
16. (c)
17. (e)
18. (d)
19. (e)
20. (c)
21. (d)
22. (e)
23. (b)

- | | | | |
|---------|---------|---------|---------|
| 24. (c) | 25. (b) | 26. (a) | 27. (d) |
| 28. (b) | 29. (c) | 30. (e) | 31. (c) |
| 32. (a) | 33. (e) | 34. (e) | 35. (e) |
| 36. (c) | 37. (c) | 38. (e) | 39. (c) |
| 40. (c) | 41. (e) | 42. (d) | 43. (c) |
| 44. (a) | 45. (b) | 46. (b) | 47. (c) |
| 48. (c) | | | |